

**Intergovernmental Science-Policy
Platform on Biodiversity and
Ecosystem Services**Distr.: General
11 December 2017

Original: English

**Plenary of the Intergovernmental Science-Policy
Platform on Biodiversity and Ecosystem Services
Sixth session**

Medellin, Colombia, 18–24 March 2018

Item 6 (a) of the provisional agenda*

**Regional and subregional assessments of biodiversity
and ecosystem services: regional and subregional
assessment for Africa****Summary for policymakers of the regional and subregional
assessment of biodiversity and ecosystem services for Africa****Note by the secretariat**

1. In decision IPBES-3/1, section III, paragraph 2, the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) approved the undertaking of four regional and subregional assessments of biodiversity and ecosystem services for Africa, the Americas, Asia and the Pacific, and Europe and Central Asia (hereinafter called regional assessments), in accordance with the procedures for the preparation of the Platform's deliverables set out in annex I to decision IPBES-3/3, the generic scoping report for the regional and subregional assessments of biodiversity and ecosystem services set out in annex III to decision IPBES-3/1, and the scoping reports for each of the four regional assessments (decision IPBES-3/1, annexes IV–VII).
2. In response to the decision, a set of six individual chapters and their executive summaries and a summary for policymakers were produced for each of the regional assessments by an expert group in accordance with the procedures for the preparation of the Platform's deliverables.
3. The annex to the present note sets out the summary for policymakers of the regional and subregional assessment for Africa (deliverable 2 (b)), which is underpinned by the six individual chapters and their executive summaries (IPBES/6/INF/3). At its sixth session, the Plenary will be invited to approve the summary for policymakers. It will be also invited to accept the chapters of the assessment, which will be revised following the sixth session to ensure consistency with the summary for policymakers as approved.

* IPBES/6/1.

Annex

Summary for policymakers of the regional assessment report on biodiversity and ecosystem services for Africa of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (deliverable 2 (b))

Authors:¹

Emma Archer (co-chair, South Africa), Luthando Dziba (co-chair, South Africa), Kalemami Jo Mulongoy (co-chair, Democratic Republic of the Congo);

Malebajoa Anicia Maoela (IPBES), Michele Walters (IPBES); Reinette (Oonsie) Biggs (South Africa), Marie-Christine Cormier-Salem (France), Fabrice DeClerck (Belgium), Mariteuw Chimere Diaw (Senegal/Cameroon), Amy E. Dunham (United States of America), Pierre Failler (France/United Kingdom of Great Britain and Northern Ireland), Christopher Gordon (Ghana, United Kingdom of Great Britain and Northern Ireland), Marwa W. Halmy (Egypt), Khaled Allam Harhash (Egypt), Robert Kasisi (Canada), Fred Kizito (Uganda), Adelina Mensah (Ghana), Luis Tito de Morais (France), Wanja Nyingi (Kenya), Nicholas Oguge (Kenya), Balgis Osman-Elasha (Sudan), Lindsay C. Stringer (United Kingdom of Great Britain and Northern Ireland); Achille Assogbadjo (Benin), Benis N. Egoh (Cameroon, South Africa), Katja Heubach (Germany), Laura Pereira (South Africa), Nadia Sitas (South Africa)

Suggested citation:

IPBES (2018): Summary for policymakers of the regional assessment report on biodiversity and ecosystem services for Africa of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. Archer, L. E. Dziba, K. J. Mulongoy, M. A. Maoela, M. Walters, R. Biggs, M-C. Cormier-Salem, F. DeClerck, M. C. Diaw, L. A. E. Dunham, P. Failler, C. Gordon, M. W. Halmy, K. A. Harhash, R. Kasisi, F. Kizito, A. Mensah, Tito de Morais, W. D. Nyingi, N. Oguge, B. Osman-Elasha, L.C. Stringer, A. Assogbadjo, B. N. Egoh, K. Heubach, L. Pereira and N. Sitas (eds.). IPBES secretariat, Bonn, Germany. [] pages.

Members of the management committee who provided guidance for the production of this assessment:

Sebebe Demissew and Jean-Bruno Mikissa (Multidisciplinary Expert Panel); Fundisile G. Mketeni and Alfred Oteng-Yeboah (Bureau).

¹ Authors are listed with, in parenthesis, their country of citizenship, or countries of citizenship separated by a comma when they have several; and, following a slash, their country of affiliation, if different from citizenship, or their organization if they belong to an international organization: name of expert (nationality 1, nationality 2/affiliation). The countries or organizations having nominated these experts are listed on the IPBES website.

Key messages

A. Africa's natural assets are unique

A1. Africa's extraordinary richness in biodiversity and ecosystem services, and wealth of indigenous and local knowledge, comprises a strategic asset for sustainable development in the region. Africa is the last place on Earth with a broadly intact assemblage of mammalian megafauna. Africa has significant regional, subregional and national variations in biodiversity that reflect climatic and physical differences, as well as the continent's long and varied history of human interactions with the environment. This natural richness, accumulated over millions of years, coupled with the wealth of indigenous and local knowledge on the continent, is central to, and constitutes a strategic asset for, the pursuit of sustainable development in the region.

A2. Africa's rich and diverse ecosystems generate flows of goods and services that are essential in providing for the continent's food, water, energy, health and secure livelihood needs. Tangible assets such as food, water and medicinal plants, and intangible assets such as sacred sites and religious spaces underpin nature's contributions to the economy and are central to a multitude of other livelihood strategies. Nature's contributions to people are generally of immense benefit to the inhabitants of the continent and others across the globe, but can occasionally be detrimental as a result of losses or of conflicts over their uses.

A3. The number of published studies on ecosystem services in Africa is relatively low and the majority of these studies were conducted in Southern and East Africa and adjacent islands, which have a longer track record of investment in research, and also in the large marine ecosystems in the Atlantic Ocean, with a focus on material contributions. These studies can help policymakers to establish priorities in the use and conservation of biodiversity and related contributions to people, and to identify the best trade-offs among different biodiversity components and their services, and among different uses.

A4. Africa has opportunities to fully realize the benefits of having such rich biodiversity and to explore ways of using it in a sustainable way to contribute to its economic and technological development. Existing indigenous and local knowledge on management of biodiversity and nature's contributions to people appears to be declining in parts of the continent. It is important that the people of Africa do not lose both the rich natural resources and the indigenous and local knowledge to manage these resources, especially at a time when knowledge is increasingly recognized as vital to the development of a low-carbon, ecological, knowledge-based economy.

A5. Certain ecosystems found in Africa are of great ecological, biological and cultural importance at regional and global levels. As a strategic measure to protect them, and also the species, knowledge and genetic resources that they harbour, countries have declared 14 per cent of the continent's land and 2.5 per cent of the seas as protected areas, while some sites have been designated as wetlands of international importance; important bird and biodiversity areas; Alliance for Zero Extinction sites, where endangered or critically endangered species occur; ecologically and biologically significant marine areas; community conserved areas; United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites; and Biosphere reserves.

B. Africa under pressure

B1. The decline and loss of biodiversity is reducing nature's contributions to people in Africa, affecting daily lives and hampering the social and economic development targeted by African countries. There are more plants, fish, amphibians, reptiles, birds and mammals threatened than ever before by a range of human-induced and natural drivers. Such losses and declines increase food, water, energy, health and livelihood insecurity, and cause or enhance climate-related risks; land degradation; loss of habitat for migratory and other species; and loss of soil fertility, productivity, and economic opportunities.

B2. Indirect drivers, including rapid population growth and urbanization, economic policies, lack of appropriate technologies, and socio-political and cultural pressures, have received limited consideration in the design of development policies and strategies. A failure to address the underlying causes of biodiversity loss will continue to threaten or undermine efforts to protect biodiversity and improve the quality of life of the people of Africa through conservation, sustainable use and equitable sharing of benefits from natural resources. Africa's current population of 1 billion is likely to double by 2050, putting severe pressure on the continent's biodiversity, unless responsible policies are implemented to counter such negative trends. Africa is also one of the most rapidly urbanizing continents. Urbanization increases demand for services, including improved water, food

and energy supply along with pollution control and waste management for households and industry, putting immense pressure on biodiversity and ecosystems.

B3. Africa is vulnerable to impacts of climate change. Temperatures in all African countries are rising faster than the global average, with some areas warming to nearly double the global mean. Droughts are more frequent and more severe. Future rainfall variability is projected to increase over most areas, with most models suggesting fewer, but higher-intensity rainfall events. Rainfall distribution, pattern and intensity is affected by climate change, with severe consequences for smallholder farmers and poor communities. The latter are also likely to be affected more severely by flooding. Climate change is likely to result in significant losses of many African plant species, some animal species, and a decline in the productivity of fisheries in inland waters of Africa by 2100. Impacts on freshwater, coastal and marine ecosystems will be severe. Climate change is also likely to change the structure and function of many ecosystems, and will exacerbate all pressures on biodiversity such as habitat conversion, overharvesting, invasive alien species, pollution and fire.

B4. Conversion of forest and rangelands for food production and urban development is inevitable and needed in Africa. Where such conversion has been undertaken injudiciously, however, it has led to habitat loss and fragmentation, degradation of catchments, and soil erosion leading to loss of biodiversity and livelihoods. The fragmentation that results from these land uses contributes to biodiversity loss, since many wildlife species are migratory, and conservation areas do not provide sufficient habitat or corridors for their migration. These limitations lead to loss of, in particular, vulnerable species, as their natural habitat is completely lost or degraded, ultimately leading to the loss of human livelihoods. The erosion of indigenous knowledge exacerbates this, as communities change their cultural use of space and resources. Land, considered as Africa's most valued asset, faces competing development needs for urban development, mining and agricultural expansion. Proper conservation planning will ensure that critical ecosystems such as freshwater streams, wetlands, indigenous forests, or endemic ecosystems that are key reservoirs of biodiversity, are sufficiently protected.

B5. Measures taken by African Governments to protect biodiversity and nature's contributions to people have contributed to the recovery of threatened species, especially in key biodiversity areas, and these efforts should be enhanced. Such measures include the establishment and effective management of protected areas, including community and privately conserved areas; restoration of various degraded ecosystems; and sustainable use of indigenous cereals, coffee, tea and ornamental plants. Other efforts in the control of invasive alien species and reintroduction of wild animals are also yielding positive results in enhancing biodiversity and nature's contributions to people, especially in improving forage for wild and domestic animal species, providing ecotourism income and employment.

C. Strengthening African transformation frameworks

C1. The alignment of Agenda 2063 goals, Sustainable Development Goals and Aichi Biodiversity Targets, linked to the conservation of biodiversity and nature's contributions to people that enhance human well-being in Africa, facilitates the development of interventions that can achieve multiple positive outcomes. African Union member States have committed themselves to fully implementing key multilateral environmental agreements. Harnessing synergies in these multilateral environmental agreements with Sustainable Development Goals and other related regional initiatives can foster the effective implementation of policies and strategies at different levels and scales, helping to ensure resource efficiency. Using existing entry points, such as regional economic communities and international funding instruments such as the Global Environment Facility and the Green Climate Fund, to leverage synergies can be particularly effective for policy implementation at regional and national levels. Governance options that harness synergies and deliver multiple benefits can help to balance patterns of access and allocation of ecosystem services and contribute towards poverty reduction.

C2. Agenda 2063 of the African Union, in particular the achievement of goals and priority areas of Aspiration 1, is geared towards a prosperous Africa based on inclusive growth and sustainable development. Africa wants to ensure that its environment and ecosystems are healthy and protected, with climate-resilient economies and communities. Africa's biodiversity forms part of its key assets for the achievement of the globally agreed Sustainable Development Goals and their targets, and can be sustainably and equitably used to reduce inequality and poverty on the continent. Africa has had robust growth and increased financial opportunity but it is also the only region to emerge from the Millennium Development Goals with increasing extreme poverty. Africa is grossly undervaluing and underusing its natural resources. Africa can achieve its development goals if it wisely uses its

149 abundant biodiversity, arable land, and diverse ecosystems, which are essential building blocks of
150 sustainable development.

151 **C3. African countries are implementing their respective national biodiversity strategies and**
152 **action plans, and are making progress in meeting commitments in the global Strategic Plan for**
153 **Biodiversity 2011–2020, but progress in many of these actions remains insufficient.** Many African
154 countries have developed their national biodiversity strategies and action plans in conformity with the
155 Strategic Plan for Biodiversity 2011–2020 and its Aichi Biodiversity Targets. There are opportunities
156 for them to enhance biodiversity conservation through appropriate revision and implementation of
157 these national biodiversity strategies and action plans in Africa. If obstacles hindering progress can be
158 tackled, it may lead to sustainable use and the equitable sharing of benefits from biological resources.

159 **C4. Effective conservation and sustainable use of biodiversity and ecosystem services will**
160 **contribute to the achievement of the objectives of the 2015 Paris Agreement on climate change to**
161 **keep global temperature increase in this century below the 2-degree mark beyond pre-industrial**
162 **levels, and to strengthen the ability of countries to deal with the impacts of climate change.**

163 Taking into account some of the climate change impacts currently experienced and projected to
164 increase, Africa has the opportunity to manage its biodiversity and ecosystems to contribute to
165 international efforts to mitigate observed and projected climate change impacts, including the
166 frequency and intensity of extreme events, through improved efforts in afforestation, restoration of
167 degraded ecosystems and commitments to reduce greenhouse gas emissions. The expansion and
168 effective management of protected areas and the provision of a network of corridors that connect
169 protected environments are critical for efforts in mitigating and adapting to climate change.

170 **D. Africa has options**

171 **D1. Africa has a range of possible options for the governance and sustainable use of its**
172 **biodiversity for the benefit of its people. The selection of appropriate governance and policy**
173 **options is critical to the conservation and sustainable use of biodiversity in support of human**
174 **well-being.** Africa now has the opportunity to undertake transformational development pathways.
175 To achieve this, African countries need to concentrate their development (urban human settlements,
176 mining and agriculture) with a view to balancing priority development needs with progressive and
177 proactive conservation of the continent's natural and cultural heritage. The identification of feasible
178 options can be supported by considering a range of plausible futures through scenario development
179 and by providing an enabling environment for long-term planning. Decision-making in Africa further
180 takes place against an array of continent-specific challenges, including the need for industrialization;
181 fast population growth; food, water and energy insecurity; extensive urbanization; climate change;
182 land degradation; ineffective governance; and unsustainable historical development decisions.

183 **D2. Africa's existing policies, strategies, plans and programmes at the national, subregional**
184 **and regional levels are moving in the right direction by addressing both direct and indirect**
185 **underlying threats to biodiversity and nature's contributions to people, and by ensuring**
186 **inclusive development and a transition to green and blue economies (see section D in the**
187 **Background for definitions) that are supportive of a good quality of life.** These policies, strategies,
188 plans and programmes are among the tools for the implementation of multilateral environmental
189 agreements and a range of regional treaties on the environment. The goals and targets from these
190 regional and global agreements shape the international and continental policy context for the
191 governance of Africa's biodiversity and its contributions to people. For their achievement, it is
192 necessary to take into account social, political, environmental and economic conditions, bearing in
193 mind ongoing changes at the global, regional, subregional and national levels.

194 **D3. Scenarios are underused in decision-making processes in Africa. The majority of the**
195 **identified scenario studies were exploratory (80 per cent), and heavily biased towards modelling**
196 **climate change impacts. Concerted effort is needed to build the capacity of African researchers,**
197 **policymakers and institutions to understand, carry out and make beneficial use of scenario**
198 **analyses for intervention planning and informed decision-making.** The selected scenario
199 archetypes (range of plausible futures) provide an overview of how interactions between nature and
200 society or between current environmental and developmental conditions, existing driving forces, and
201 optional management interventions could shape possible future trajectories of change across Africa in
202 the coming decades, as well as the potential implications for nature and nature's contributions to
203 people. There is also, generally, a dearth of accessible peer-reviewed and grey literature to support a
204 comprehensive assessment of policy and governance options for Africa. Such a limitation creates
205 challenges when identifying policy options, but presents an opportunity for more frequent and
206 comprehensive ecosystem assessments. It further presents an opportunity for the development of case
207 studies and pilot projects that explore the different policy options and instruments that are specifically

208 relevant in the African context. Data collected from such efforts will help strengthen scenarios and
209 models about plausible futures for Africa.

210 **D4. Achieving the African Union’s vision of an integrated, prosperous and peaceful Africa by**
211 **2063 and associated Sustainable Development Goals and Aichi Biodiversity Targets is**
212 **problematic under a fortress world scenario² which prioritizes national sovereignty, self-reliance**
213 **and security. The policy reform and market forces scenario trajectories are also unlikely to fully**
214 **meet the aforementioned vision, given their higher propensity to undermine the natural**
215 **resource-base in the long-term. Regional sustainability and local sustainability archetypes,**
216 **however, provide the most likely options for achieving multiple and coupled goals.**

217 Transformative outcomes will be fully attained if concerted efforts are taken to mobilize financial
218 resources and build the capacity of African researchers, policymakers and institutions to understand,
219 carry out and use scenario analyses as guidance mechanisms for decision-making, bearing in mind that
220 Africa is increasingly interconnected with the rest of the world, especially through global markets and
221 trade.

222 **E. The future we want – making it happen together**

223 **E1. Africa can move towards achieving its commitments and targets through**
224 **multi-stakeholder and multi-level adaptive governance, as well as improved integration of**
225 **indigenous and local knowledge through recognition of traditional institutions (hereafter**
226 **referred to as polycentric governance).** Such a polycentric governance approach bridges sectors and
227 operates at multiple levels and scales, over different time frames and also offers an alternative to
228 top-down approaches that are less sensitive to local constraints and to bottom-up approaches that are
229 sometimes inadequate for dealing with issues at higher levels. Mainstreaming biodiversity and
230 ecosystem services into policies and actions at different levels is vital to and also consistent with
231 traditional polycentric governance approaches on the continent, by bringing together stakeholders
232 (both public and private) with different perspectives. These approaches can be resource-intensive in
233 the short term, but can provide agility in responding to changing drivers; thereby reducing conflict.
234 They may also help with achieving balance between conservation and use of biodiversity and
235 ecosystem services when supported by appropriate legal, regulatory, economic and financial
236 instruments.

237 **E2. Governance options that harness synergies and deliver multiple benefits, supported by an**
238 **enabling environment, can help to balance patterns of access and allocation of ecosystem**
239 **services in Africa.** Policy coherence may also contribute towards poverty reduction and help to build
240 resilience of integrated social-ecological systems. Harnessing synergies in multilateral agreements,
241 protocols, Sustainable Development Goals, Agenda 2063 aspirations and related targets and initiatives
242 can foster effective implementation of policies and strategies at different governance levels and
243 temporal and spatial scales, and help to ensure efficient and sustainable resource use. Using existing
244 entry points and mechanisms that draw on a mixture of policy instruments can help to leverage
245 synergies, by facilitating the implementation of policy at regional and national levels. Africa’s radical
246 transformation towards sustainability in line with the 2030 Sustainable Development Goals and
247 Agenda 2063 will depend on investment targeting multi-stakeholder, multilevel adaptive governance.

248

² Our assessment clustered African scenario studies into five archetypes emphasizing market forces, policy reform, security (fortress world), regional sustainability and local sustainability. These scenario archetypes provide an overview of how interactions between nature and society, or between current environmental and developmental conditions; existing driving forces; and optional management interventions could shape possible future trajectories of change across Africa in the coming decades, and the potential implications for nature and nature’s contributions to people. An overall description of the scenario archetypes used to categorize the scenarios of relevance to Africa is given in Table SPM.4 (also 5.3).

249

Background

250 The Africa regional assessment is the first of its kind in the continent, and constitutes one of four
 251 regional assessments conducted under IPBES. This assessment is a synthesis of the state of knowledge
 252 on biodiversity and nature's contributions to people. To achieve its objectives and address the central
 253 themes, this assessment involved the development of credible, robust and inclusive evidence from a
 254 range of knowledge systems, including peer-reviewed literature, grey literature, and indigenous and
 255 local knowledge. The assessment aims to provide the foundation for a meaningful dialogue across the
 256 full range of stakeholders involved in African development.

257 A number of key thematic challenges are considered by the Africa assessment, including the
 258 food-energy-water-livelihood nexus; climate-related risks; land degradation; invasive alien species;
 259 sustainable use; and technological innovations. The assessment pays attention to questions of equity,
 260 poverty reduction, rights, social relationships, economic contributions, spirituality and cultural
 261 heritage in its investigation of biodiversity, ecosystem functions and nature's contributions to people.
 262 The Africa assessment further considers the impacts of trade and investment, along with the
 263 contribution of low-carbon, ecological and social transformations of the economy. Finally, the
 264 assessment seeks to understand policy options for decision-makers to manage biodiversity and
 265 nature's contributions to people under different future scenarios. By focusing on biodiversity and
 266 nature's contributions to people, this regional assessment is critical to African policymakers, all
 267 constituents of African communities, civil society, the private sector, and other stakeholders involved
 268 in environmentally sensitive investments and land-use decisions.

269

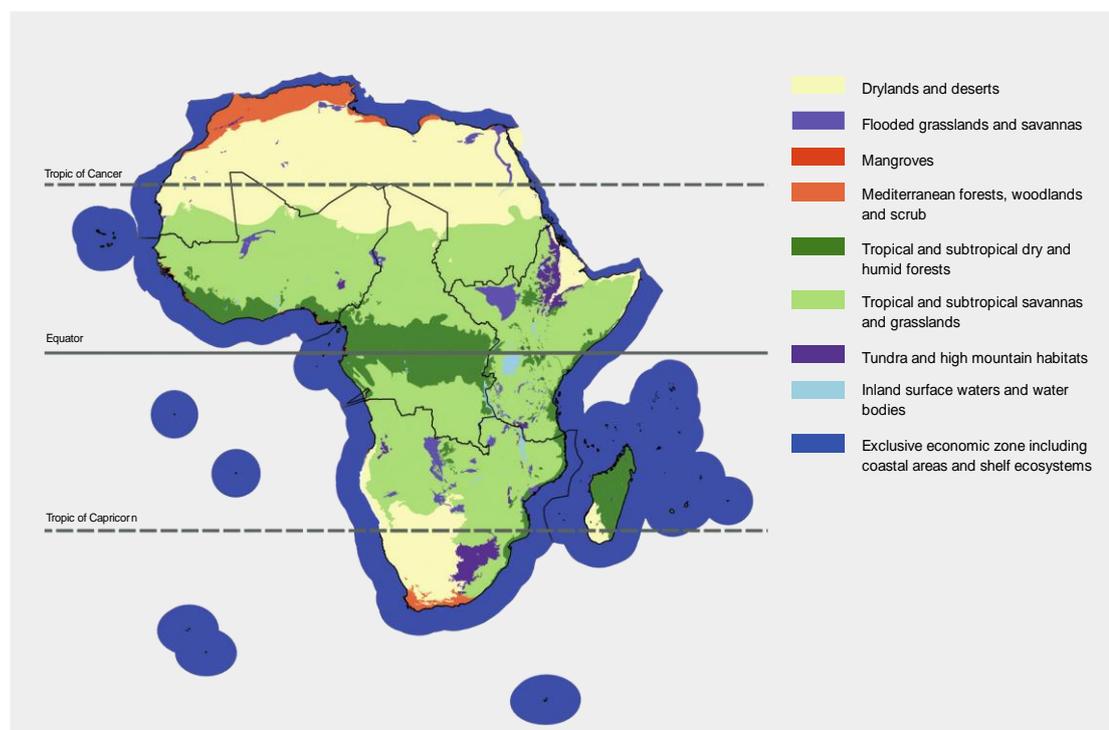
A. Africa's natural assets are unique

270 **Africa is very rich in biodiversity and is the last place on Earth with a large number of**
 271 **mammalian megafauna. The continent has significant regional, subregional and national**
 272 **variations in biodiversity that reflect climatic and physical differences, together with its long and**
 273 **varied history of human interactions with the environment. Africa's natural richness, coupled**
 274 **with the wealth of indigenous and local knowledge on the continent, is central to, and constitutes**
 275 **a strategic asset for, the pursuit of sustainable development (*well established*).** Overall, 23 per cent
 276 of Africa's land area consists of forests and woodlands and 27 per cent is arable land, of which about
 277 one fifth is under cultivation. The rest consists of savannah, grasslands, arid zones and deserts
 278 (Figure SPM.1). Africa has diverse wetlands, inland surface waters and water bodies – rivers, lakes
 279 and estuaries – scattered throughout the continent, with the Nile, Congo, Zambezi and Niger rivers,
 280 and lakes Tanganyika, Chad and Victoria featuring among the largest freshwater bodies in the world.
 281 Wetlands in Africa constitute 1 per cent of Africa's total land surface area and comprise natural and
 282 constructed freshwater marshes, river floodplains, swamps, peat lands, mangroves, estuaries and
 283 coastal lagoons. Africa is surrounded by six large marine ecosystems: the Agulhas Current, the Somali
 284 Current, the Benguela Current, the Canary Current, the Guinea Current, and the Mediterranean. Three
 285 of these six large marine ecosystems rank within the four most productive large marine ecosystems in
 286 the world. Primary productivity in large marine ecosystems is generally higher than in open ocean.
 287 The total economic value of environmental goods and services from the African large marine
 288 ecosystems is estimated at \$139 billion per year, a solid foundation for sustainable development and
 289 for good quality of life in Africa {1.1.3, 1.3.4.1, 3.1, 3.3.1, 3.4}.

Figure SPM.1

Map of Africa showing subregions and ecosystem units of analysis

Africa comprises five subregions under different climatic conditions: a Mediterranean climate at the northernmost and southernmost fringes; an equatorial and tropical climate characterized by high mean rainfall in Central Africa and across the southern part of West Africa; climates ranging from hyper-arid to semi-arid, with very sparse or no rainfall, in a great part of North Africa and West Africa, and also part of Southern Africa; and a subtropical climate in East Africa and adjacent islands and a great part of Southern Africa. These climatic variations have contributed towards a wide range, and significant richness, of biodiversity at the ecosystem, species and genetic levels.



Source: Map layers adapted from Olsen et al., 2001.³

290 **Africa's rich biodiversity and diverse ecosystems generate a flow of goods and services that are**
 291 **essential in supplying food, water, energy, health and secure livelihoods for the continent. These**
 292 **tangible and intangible assets, which may be material, non-material or regulating in form,**
 293 **constitute nature's contributions to human well-being. Coupled with the wealth of indigenous**
 294 **and local knowledge accumulated over millions of years, they underpin Africa's economy and**
 295 **constitute a strategic asset for the pursuit of sustainable development in the region (*well***
 296 ***established*). They are generally of immense benefit to the inhabitants of the continent, but can**
 297 **occasionally be detrimental because of impacts such as disease or of conflicts over their uses**
 298 **(*well established, incomplete*). More than on any other continent, many people in rural Africa**
 299 **remain closely dependent on wild nature and its services to survive. In Africa, more than 62 per**
 300 **cent of the population live in rural areas and depend directly on these services. According to the**
 301 **Millennium Development Goals report, however, during the period 2011–2013, sub-Saharan Africa**
 302 **was the most food-deficient region in the world, with 25 per cent of the population having faced**
 303 **hunger and malnutrition. Apart from the countries bordering the Mediterranean Sea, South Africa and**
 304 **a few countries in West and East Africa, many countries depend on imports and food aid to fulfil food**
 305 **requirements. Sub-Saharan countries excluding South Africa rely heavily on wood for their basic**
 306 **energy needs, with a per capita fuelwood consumption of 0.89 m³/year, the highest in the world.**
 307 **Africa is also endowed with many rivers, lakes, wetlands and groundwater reservoirs. Water**
 308 **abundance offers significant potential for energy production through hydropower in certain areas, with**
 309 **a potential estimated at 1.4 million GWh per year (Table 2.9). Yet Africa is currently experiencing an**
 310 **increasing incidence of water stress. Many sites in Africa have either been classified as protected,**

³ Olson, D. M., Dinerstein, E., Wikramanayake, E. D., Burgess, N. D., Powell, G. V. N., Underwood, E. C., D'Amico, J. A., Itoua, I., Strand, H. E., Morrison, J. C., Loucks, C. J., Allnutt, T. F., Ricketts, T. H., Kura, Y., Lamoreux, J. F., Wettengel, W. W., Hedao, P., Kassem, K. R. 2001. *Terrestrial ecoregions of the world: a new map of life on Earth*. *Bioscience* 51(11):933–938; Data layers obtained from UNEP-WCMC and retrieved from <https://www.worldwildlife.org/publications/terrestrial-ecoregions-of-the-world>.

311 heritage or sacred sites that contribute to human well-being. Regulating contributions include, for
312 example, services provided by nesting, feeding and mating sites for birds and mammals, e.g., the
313 important bird and biodiversity areas; services provided by insect pollinators such as bees and
314 butterflies; regulation of air quality, climate, ocean acidification, freshwater and coastal water quality;
315 protection and decontamination of soils and sediments {1.1.4, 1.3.9, 4.2.1.3, 4.2.2.4}.

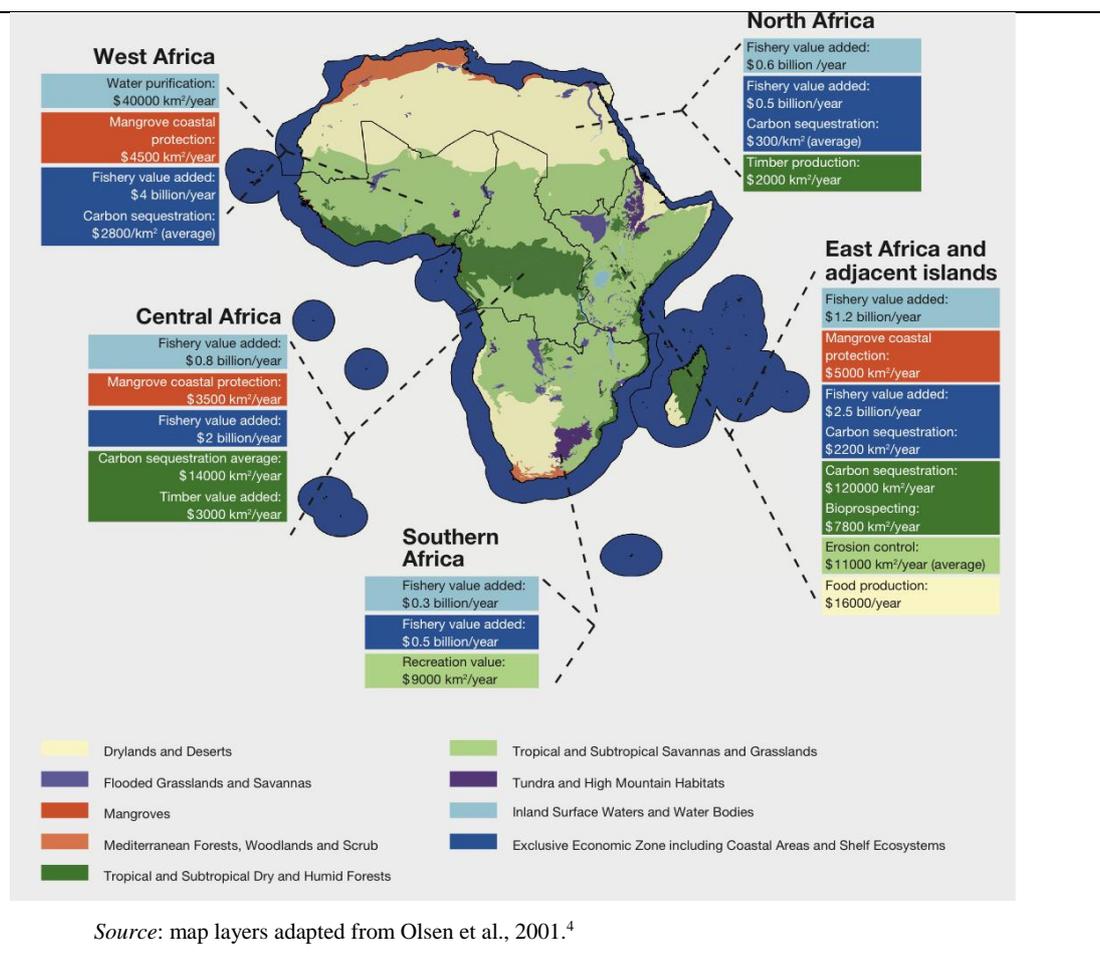
316 **The true value of biodiversity and nature's contributions to human well-being tend to be**
317 **under-appreciated in decision-making processes in Africa, in particular for non-material and**
318 **regulating contributions. Existing studies on the valuation of biodiversity and nature's**
319 **contributions to people in Africa are few and limited in both geographical scope and the types of**
320 **ecosystems covered (*established but incomplete*). Valuation of biodiversity and its contributions to**
321 **people is a tool used in decision-making and in communicating their importance to humanity, thus**
322 **servicing as support for their conservation and sustainable use as well as the sharing of benefits from the**
323 **use of biological resources. Knowing the value of biodiversity components and their contributions to**
324 **people can thus encourage investments for their management through the most appropriate methods,**
325 **and assist in assessing the trade-offs between different policy options and also the cost and benefits of**
326 **biodiversity conservation and use policies. Failure to reflect values in decision-making often results in**
327 **unsustainable use and depletion of biodiversity and ecosystem services. Valuation of biodiversity and**
328 **nature's contributions to people has received limited attention across Africa (Figure SPM.2). As**
329 **shown in Figure SPM.3, more studies were conducted in coastal and marine areas, inland waters and**
330 **forests than in the other ecosystems. Most value studies were conducted in Southern Africa and East**
331 **Africa and adjacent islands {appendix 2.1 in chapter 2 and 1.3.8.5, 1.3.9, 2.2}.**

332 **Many ecosystems found in Africa are of great ecological, social, economic and cultural**
333 **importance at the regional and global levels. Such ecosystems are a source of immense genetic**
334 **resources and knowledge (*established but incomplete*). As a strategic measure to protect them,**
335 **countries have classified as protected 14.7 per cent of the continent's land and 2.5 per cent of the**
336 **seas within national jurisdiction, while some sites have been designated as important or for**
337 **special conservation reasons. Africa boasts 369 wetlands of international importance (Ramsar sites),**
338 **142 UNESCO World Heritage Sites, 1255 important bird and biodiversity areas, and 158 Alliance for**
339 **Zero Extinction sites where endangered or critically endangered species occur. The continent hosts**
340 **eight of the world's 36 biodiversity hotspots. These hotspots are the Earth's most biologically rich and**
341 **threatened areas, with large numbers of endemic or threatened species. They include the Cape Floristic**
342 **Region, the Eastern Afromontane, Eastern Arc Mountains and Coastal Forests, the Guinean Forests of**
343 **West Africa, Madagascar and the Indian Ocean Islands, the Maputaland-Pondoland-Albany**
344 **Mediterranean Basin and the Succulent Karoo. Hotspots are all integrated in protected areas at levels**
345 **ranging from 2.5 to 17.5 per cent (Table 3.3). The Congo forests of Central Africa, the**
346 **Miombo-Mopane woodlands and grasslands, the Serengeti, the Okavango, the Sahara-Sahel, the**
347 **Kalahari Desert, and the Namib Desert are among the world's most renowned wilderness areas. Many**
348 **areas also serve as important components of the flyways for migratory species recognized in the**
349 **Agreement on the Conservation of African-Eurasian Migratory Waterbirds. Many of these important**
350 **ecosystems are fragile or have become vulnerable to anthropogenic actions and environmental**
351 **changes, such as climate change, while others appear to be more naturally resilient, and can serve as**
352 **refugia for species shifting their range in response to such environmental changes. Africa's**
353 **biodiversity has global importance. The continent hosts a quarter of the world's mammal species; East**
354 **and Southern African rangelands shelter the greatest diversity of large mammals in the world; the**
355 **continent is also home to approximately one fifth of the world's bird species, high levels of amphibian**
356 **diversity and endemism in Central Africa and at least one sixth of the world's plant species, which are**
357 **endemic to Africa. Several global centres of species richness and endemism for freshwater fish,**
358 **molluscs and crustacean are in Africa.**

359

Figure SPM.2
Indicative lists of economic values of nature’s contributions to people in Africa

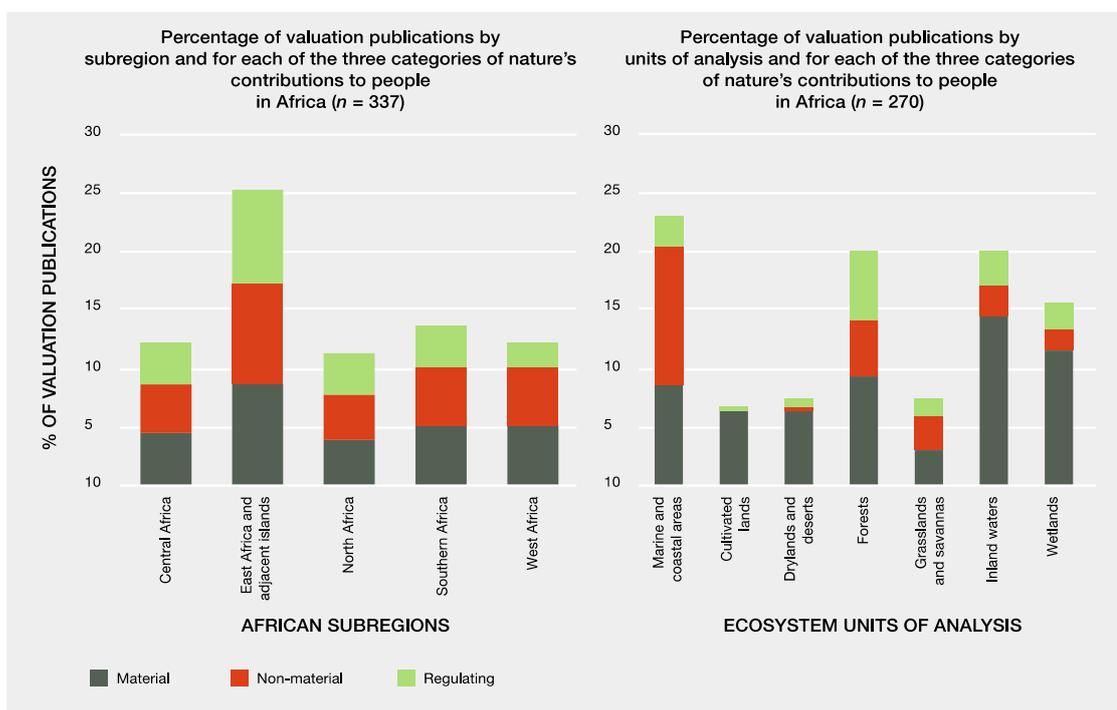
Sample values of some ecosystem services in selected ecosystems (freshwater, marine and coastal areas and forests) in Africa. Data come from various sources, with methodological differences, which means that comparisons of values between subregions or ecosystems is not currently possible.



360 The genetic diversity of the continent’s biological resources can be seen in the livestock breeds and
 361 crop varieties that reflect Africa’s unique and varied biological and cultural heritages, the product of
 362 interactions with and adaptation to an ever-changing environment and through exchanges with other
 363 cultures. Africa is home to many subsistence farmers, small-scale livestock herders and pastoralists
 364 who maintain a range of plant and animal genetic resources for food and agriculture, which insure
 365 them against drought, pests and changing environmental conditions. Many food crops originate in
 366 Africa, including species of wheat, barley, millet and sorghum; teff (*Eragrostis tef*) (Figure SPM.4);
 367 coffee; rooibos tea (*Aspalathus linearis*); cowpea (*Vigna unguiculata*); and oil palm (*Elaeis*
 368 *guineensis*). { 1.3.8.1, 3.3.1, 3.3.2, 3.4.1, 3.4.5, 3.5, 4.5.1.1 }.
 369

⁴ Olson, D. M., Dinerstein, E., Wikramanayake, E. D., Burgess, N. D., Powell, G. V. N., Underwood, E. C., D’Amico, J. A., Itoua, I., Strand, H. E., Morrison, J. C., Loucks, C. J., Allnutt, T. F., Ricketts, T. H., Kura, Y., Lamoreux, J. F., Wettengel, W. W., Hedao, P., Kassem, K. R. 2001. Terrestrial ecoregions of the world: a new map of life on Earth. *Bioscience* 51(11):933–938; Data layers obtained from UNEP-WCMC and retrieved from <https://www.worldwildlife.org/publications/terrestrial-ecoregions-of-the-world>.

Figure SPM.3
Comparison of the number of published papers on the valuation of three different types of nature's contributions to people, by subregion and by ecosystem unit of analysis



370
 371
 372

Figure SPM.4
Teff - example of an indigenous food crop

Teff (*Eragrostis tef*) is one of many crops that have been neglected and are currently underused. It has now gained recognition at national, regional and global levels for its nutritional value, as an important source of income in the local and also regional markets, and for its significant contribution to food security.

NUTRIENT COMPOSITION OF TEFF GRAIN (100 G)	
Food energy	375 kcal
Starch	73%
Protein	3.87g
Calcium	17-124mg
Iron	9.5-37.7mg

Photos: @ Shrestha Dennisaw ■ © Shutterstock/Mankuldasz

373

B. Africa under pressure

374

375

376

377

378

379

380

381

382

383

384

385

386

387

Decline and loss of biodiversity, and the reduction of nature's contributions to people in Africa are having an increasing impact on daily lives and hampering the continent's socioeconomic development (*well established*). The decline in biodiversity and nature's contributions to people increases insecurity of food, water, energy, health and livelihoods and exacerbates climate-related risks, land degradation and desertification, loss of habitats for migratory species, loss of soil fertility and productivity, and loss of tourism opportunities. Increasing numbers of mammals, birds, amphibians, reptiles, fish and plants are directly or indirectly threatened by various natural or anthropogenic drivers (Figure SPM.5). Threats to biodiversity also affect environmental health and create conditions in some areas for the spread of zoonotic diseases and the establishment and spread of invasive alien species. Social relations within and between countries are strained by loss of biodiversity and nature's contributions to people, contributing to inequities among peoples that are the basis of many conflicts on the continent of Africa. Many species are under serious pressure and, increasingly, many of these species are under threat of extinction (Figure SPM.5) {3.1, 3.3, 4.2.2, 4.3; Table 4.9}.

388

389

390

391

392

393

394

395

396

397

398

399

400

401

402

403

The various natural and human drivers causing biodiversity loss and decline in nature's contributions to people in Africa include the conversion of natural habitats into agricultural lands and urban settlements. Other factors include unregulated development of infrastructure and human settlements; overharvesting of biological resources; introduction of invasive alien species; and air, water and soil pollution (*established*). Climate change, manifested by a rise in temperature, sea level rise and changes in rainfall pattern, distribution and quantity exacerbates all the other direct drivers of biodiversity loss. The frequency of natural hazards, in particular drought, floods, hurricanes and earthquakes, further contributes to pressures and threats to various species. Africa is also developing at a fast pace, at an average of 4 to 5 per cent growth in GDP, with growing investments targeting infrastructure development, including in the telecommunications, energy, transport, resource-extractive and large-scale agro-industrial sectors. Such developments can pose serious threats to biodiversity and its contributions to people. A variety of development and industrial activities, including the building or expansion of roads, dams, hydroelectric projects, petroleum and gas pipelines, mines, oil and gas fields, ports and cities, are already causing significant deforestation, land degradation, pollution, soil erosion and biodiversity loss (Table SPM.1). African countries, however, have options (see sections C and D) {3.1, 3.3, 4.2.2, 4.3; Table 4.9}.

404

405

406

407

408

409

410

411

412

413

414

415

416

417

418

419

420

Africa's current population of 1 billion is likely to double by 2050, putting severe pressure on the continent's biodiversity and nature's contributions to people, unless responsible policies and strategies are adopted and implemented. Africa is also one of the most rapidly urbanizing continents (*well established*). Urbanization puts immense pressure on urban infrastructure and demand for services, including water supply, food supply, pollution control and waste management, and also on energy supply for households and for industrial development. Urban communities are also producing large quantities of solid and other wastes that are leading to environmental pollution. Much of what determines the extent of the environmental impacts is how the urban populations behave—their consumption and living patterns—and not just how large they are. In 2003, 39 per cent of Africa's 850 million people lived in urban and peri-urban areas while, by 2030, this will rise to 54 per cent. At the same time, there are large variations in the patterns of urbanization across African regions. Searching for alternative livelihoods or economic opportunities mostly influences rural-urban migration, leading to informality and unplanned urban settlements. There is, therefore, a great need for policies to encourage sustainable and equitable development by, for example, directing development opportunities to rural areas and redirecting planned urban expansion to economic development zones in rural settings, in particular those that have adequate water and renewable energy supply {1.3.4, 1.3.7, 4.4.4.1; Tables 4.10, 5.4.2; and Figures 1.14, 4.24 a, b, 4.25, 4.26}.

Figure SPM.5

Increase in number (totals per taxonomic group) of threatened species of plants, fish, amphibians, reptiles, birds and mammals in each subregion by year of assessment in Africa

The figures below show the number of threatened species in each subregion (totals by taxonomic group). The Red List of Threatened Species of the International Union for Conservation of Nature (IUCN) stresses that the figures for these groups should be interpreted as the number of species known to be threatened within those taxa that have been assessed to date, and not as the overall total number of threatened species for each group. Overall, the pattern revealed by the assessment indicates that the status of all the taxonomic groups analysed continues to deteriorate steadily from 2004 (used as reference year) possibly due to habitat destruction and associated degradation and fragmentation.

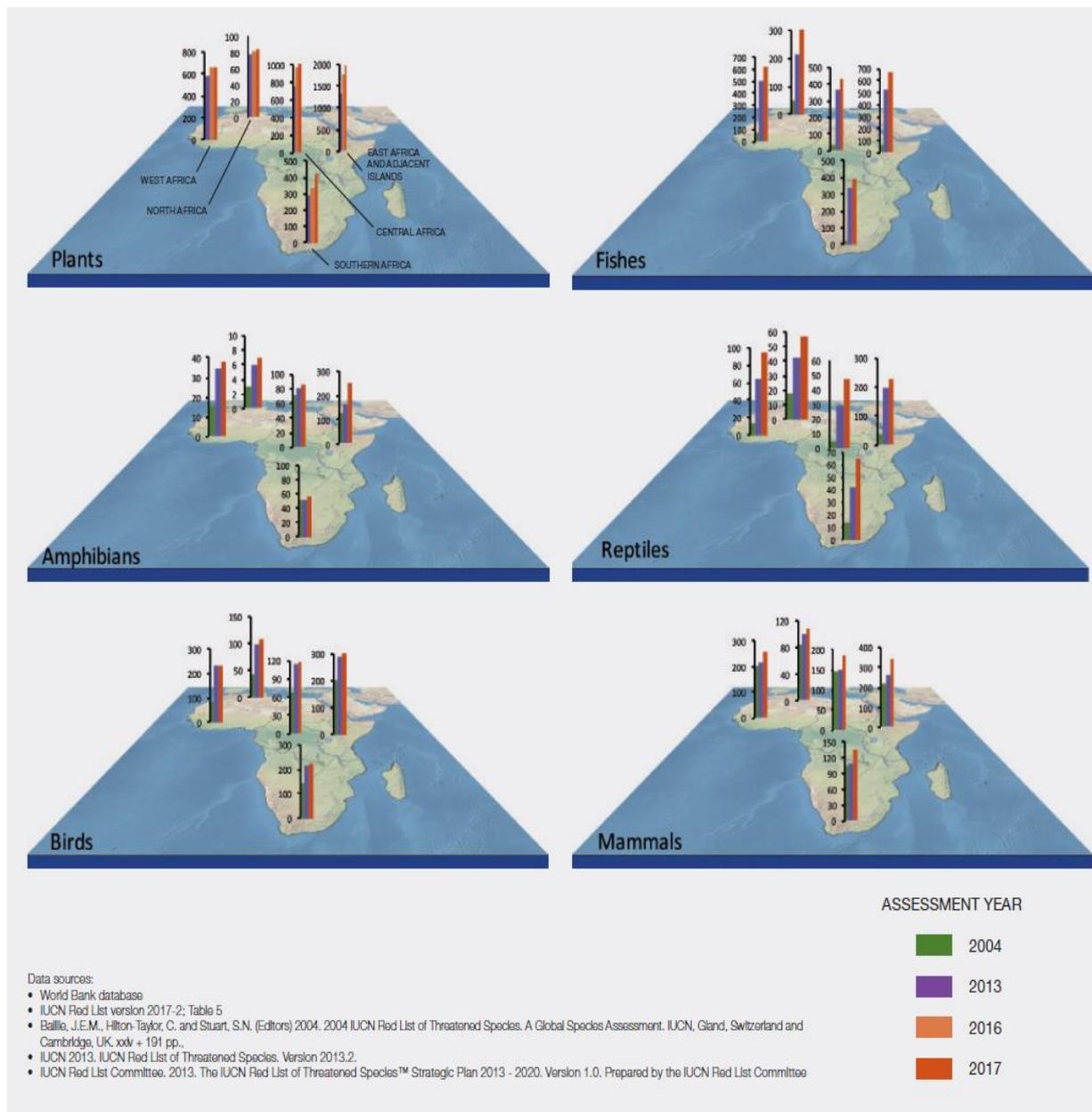


Table SPM.1

Key drivers of biodiversity change in Africa shown per subregion and ecosystem type

This table shows a general qualitative assessment of the various drivers of change to biodiversity and nature’s contributions to people in Africa. It assesses the trend of the impact (high, moderate or low increase) of respective drivers on the various ecosystem types. The thickness of the arrows indicates the level of agreement for the countries sampled.

Subregions	ECOSYSTEM TYPE	DRIVERS OF BIODIVERSITY CHANGE								
		Direct drivers						Indirect drivers		
		Climate change	Habitat conversion	Overharvesting	Pollution	Invasive alien species	Fire	Demographic change	Socio-cultural factors	Protected areas
CENTRAL AFRICA	Terrestrial/Inland waters	↗	↑	↑	↑	↑	↗	↑	NI	↗
	Coastal/Marine	↗	↑	↑	↗	↗	↔	NI	NI	↔
EAST AFRICA AND ADJACENT ISLANDS	Terrestrial/Inland waters	↑	↗	↑	↗	↗	→	↑	↔	↗
	Coastal/Marine	↑	↔	↗	↗	↗	↔	↑	↔	↔
NORTH AFRICA	Terrestrial/Inland waters	↑	↗	↗	↗	↑	↔	→	NI	→
	Coastal/Marine	↗	↗	↗	↗	↑	↔	→	NI	→
SOUTHERN AFRICA	Terrestrial/Inland waters	↗	↗	↑	↗		↗	↗	NI	↗
	Coastal/Marine	↗	↗	↗	↗	↑	↔	↗	NI	↗
WEST AFRICA	Terrestrial/Inland waters	↑	↑	↑	↗	↗	→	↗	→	→
	Coastal/Marine	↑	↗	↗	↗	→	↔	↗	↓	→

Width of an arrow = Level of agreement for countries sampled

Arrow = Trend of the respective impact of the driver

↑ High Increase ↗ Moderate Increase → Low Increase ↓ Decrease NI = No Information available ↔ Unchanged/Under control

422 **Africa is the continent most vulnerable to the impacts of climate change (*well established*).**
 423 Temperatures in all African countries are expected to rise faster than the global average with some
 424 areas, such as the Kalahari basin, warming at close to double the global mean. Future rainfall
 425 projections show less agreement, although rainfall variability is projected to increase over most areas.
 426 There is a strong probability of an increased frequency of high-intensity rainfall events. Climate
 427 change could result in significant losses of African plant species, over 50 per cent of some bird and
 428 mammal species, and in the decline of the productivity of Africa’s lakes by between 20 and 30 per
 429 cent by 2100. Impacts on both freshwater and coastal systems may also be severe, with sea level rises,
 430 changes in upwelling, sea surges, and changes in sea surface temperature further likely to have an
 431 impact on coastal ecosystems. Some species, in certain areas and under certain conditions, will need to
 432 migrate across landscapes and seascapes to track suitable habitats. The ability of species to migrate
 433 will differ by taxon, will be dependent on the existence of migratory corridors, and in certain areas
 434 will be hindered by land cover change and habitat fragmentation driven by human activity. Current
 435 protected area networks may need to be re-aligned to account for the climate change. The direct
 436 impact of the globally raised level of carbon dioxide (CO₂) is further likely to have profound impacts
 437 on species distributions within the terrestrial environment, and may conceivably be a direct contributor
 438 to biome level change. Increases of CO₂ in the oceans will increase water acidity and this, coupled
 439 with increased temperature, will have profound impacts, including coral bleaching and the
 440 decalcification of shells of molluscs. At high CO₂ concentrations, this may lead to the total collapse of
 441 coral systems and the multitude of ecosystem functions that they support (including compromising
 442 their support function to many fisheries), {4.2.2.2; Figure 4.1}.

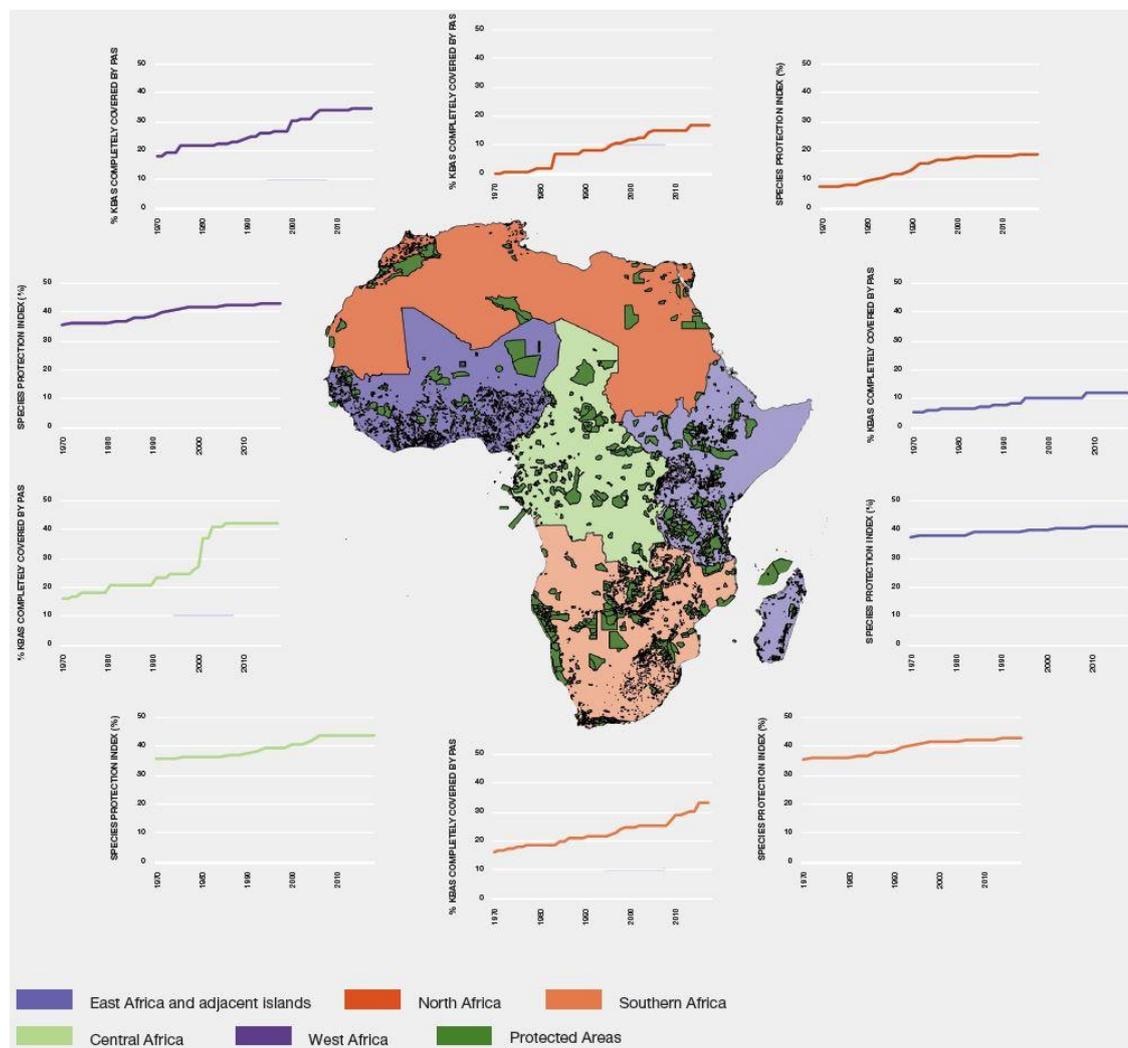
443 **Land-cover change in Africa results from loss of the land's capacity to sustain biodiversity and**
444 **provide nature's contributions to people. Unregulated conversions of forest and rangelands for**
445 **crop production, mining, urban and infrastructure development, among other human-induced**
446 **changes, have led to habitat loss, degradation of catchments and soil erosion, leading to loss of**
447 **biodiversity and livelihoods (*established but incomplete*).** Land, considered as Africa's most valued
448 asset for all aspects of life and development, is facing increasing challenges of competing development
449 needs for urban and infrastructure development, extractive industries and agricultural expansion. Some
450 2 per cent of Africa's land surface (500,000 km²) is estimated to be degraded because of soil erosion,
451 salinization, pollution and loss of vegetation or soil fertility. This is a result of a combination of factors
452 (such as deforestation, unsustainable agriculture, overgrazing, uncontrolled mining activities, invasive
453 alien species and climate change). Agricultural expansion, as opposed to intensification, is the
454 dominant driver of biodiversity loss, in particular the conversion of natural habitat to cultivated land.
455 There has been an expansion of cash crops, much of this exacerbated by the growing land-grab
456 phenomenon where foreign investors are being allocated large pieces of land for bioenergy production,
457 with significant impacts on the resources of indigenous and local populations, their knowledge and
458 well-being. The total area cultivated is strongly associated with loss of indigenous plant abundance
459 and indirectly results in loss of mammals and birds. The fragmentation that results from various land
460 uses contributes to local extinctions of sedentary and non-sedentary species, since many wildlife
461 species are migratory and conservation areas do not provide sufficient habitat and corridors for their
462 dispersal or migration. Such limitation leads to loss of biodiversity, in particular of vulnerable species,
463 as their natural habitat is lost or degraded. The erosion of indigenous knowledge exacerbates this
464 process, as communities change their cultural use of space and resources { 1.3.6, 4.1, 4.2.1.1, 4.2.2.1,
465 4.2.2.3.1, 4.2.2.4, 4.2.2.5, 4.4.2.2.1, 5.5.1 }.

466 **Establishment and effective management of protected areas and other types of conservation**
467 **areas, including community and privately managed conservation areas, together with measures**
468 **such as restoration of various degraded ecosystems and sustainable use of indigenous cereals**
469 **and plants, has contributed to the recovery of threatened species, especially in areas critical for**
470 **biodiversity. A key challenge here is to find strategic ways in which to enable such successes,**
471 **building on what has already been done (*established but incomplete*).** Approximately 14 per cent
472 (2 million km²) of the total land area of Africa is protected, including 6 per cent of biodiversity-rich
473 tropical evergreen broadleaf forests. These valuable ecoregions, rich in endemic species, are
474 concentrated in such countries as the Democratic Republic of the Congo and Madagascar, where
475 protection may be improved. Acceleration of the expansion of protected area networks in these areas
476 of rich biodiversity and endemism is urgently needed, as well as attention to other measures involving
477 the restoration of degraded ecosystems and, for example, sustainable use of indigenous plants and
478 resources. It is clear that barriers to the expansion of protected areas and to restoration measures do
479 exist in certain areas, and these need to be better understood, with the consideration of strategic
480 approaches (including enhancing multiple synergies, and taking a multiple benefits approach; see
481 section E). In most of Africa, the opportunity still exists for proactive measures to conserve
482 biodiversity. Efforts in the control of invasive alien species and reintroduction of wild animals are
483 yielding positive results in enhancing biodiversity and nature's contributions to people through
484 improved forage production by indigenous species, high ecotourism income and other factors,
485 contributing to good quality of life. In addition, progress in the sustainable use of indigenous cereals
486 and resources such as indigenous ornamental plants (see, for example, section A. on products such as
487 teff) is encouraging. Further progress is needed to improve the management effectiveness of protected
488 areas (Figure SPM.6), { 3.3.2, 4.5, 4.5.1; Figure 3.7 }.

489

Figure SPM.6
Contribution of Africa’s protected area network to the conservation of key biodiversity areas and species protection index

The protected areas shown on this map include all World Database of Protected Areas recognized reserves, while the key biodiversity areas referred to on the graphs represent sites critical to global persistence of biodiversity and include important bird and biodiversity areas and Alliance for Zero Extinction sites. Percentage key biodiversity areas show trends in complete coverage of some key biodiversity areas by protected areas over time. The Species Protection Index shows species representation in protected areas and changes over time (using integrated distribution, habitat suitability, remote sensing and local species observations for validation). In essence, the Index shows how well a region’s existing reserves (of differing categories) represent species in terms of capturing a minimum portion of their global distribution.



Data sources: UNEP-WCMC and IUCN, 2017;⁵ Species Protection Index, Jetz et al., 2012;⁶ Protected Area Coverage - Key Biodiversity Areas, Brooks et al., 2016.⁷

⁵ UNEP-WCMC and IUCN, 2017. Protected Planet: The World Database on Protected Areas (WDPA) On-line, September/2017, Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.

⁶ Jetz, W., J. M. McPherson, and R. P. Guralnick. 2012. Integrating biodiversity distribution knowledge: toward a global map of life. *Trends in Ecology and Evolution* 27:151–159.

⁷ Brooks, T. M., Akçakaya, H. R., Burgess, N. D., Butchart, S. H. M., Hilton-Taylor, C., Hoffmann, M., Juffe-Bignoli, D., Kingston, N., MacSharry, B., Parr, M., Perianin, L., Regan, E., Rodrigues, A. S. L., Rondinini, C., Shennan-Farpon, Y. and Young, B. E. 2016. Analysing biodiversity and conservation knowledge products to support regional environmental assessments. *Sci. Data*. 3: 160007.

C. Strengthening African transformation frameworks

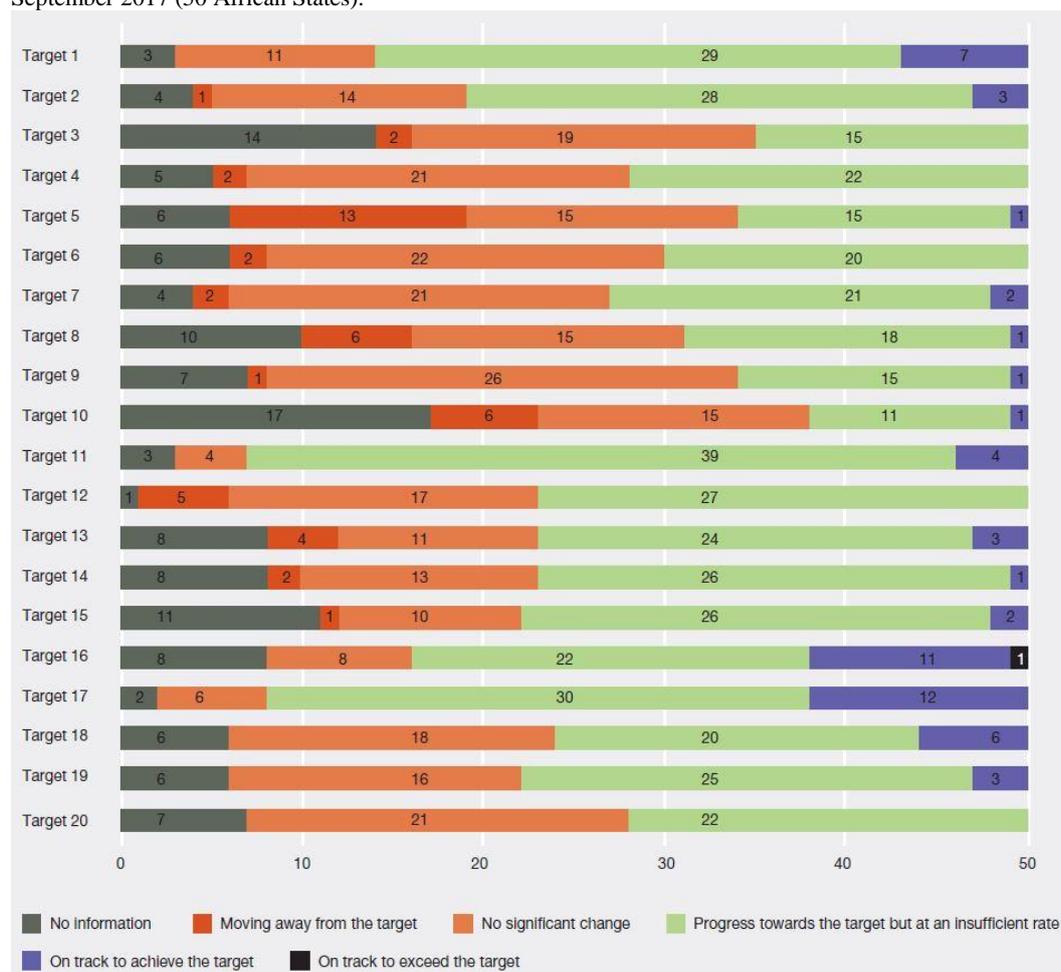
By implementing their respective updated national biodiversity strategies and action plans, African countries are making progress towards the achievement of the Aichi Biodiversity Targets adopted as part of the global Strategic Plan for Biodiversity 2011–2020. The vision of this Strategic Plan and its targets is to value, conserve, restore and wisely use biodiversity, maintain ecosystem services, and thus sustain a healthy planet, while delivering benefits essential for all people. The contributions of African countries to the achievement of the Aichi Biodiversity Targets will be insufficient, partly as a consequence of many national targets being significantly lower than those adopted for the globe (*well established*). In adopting the Strategic Plan for Biodiversity 2011–2020 and its Aichi Biodiversity Targets in 2010, the Conference of the Parties to the Convention on Biological Diversity invited parties to establish their own national targets while updating their national biodiversity strategies and action plans. African countries took into account their respective national needs and priorities, while bearing in mind their commitments under various multilateral environmental agreements and regional and subregional agreements. Harnessing synergies in multilateral environmental agreements and other related regional initiatives fosters the effective implementation of policies and strategies at different levels and scales, helping to ensure resource efficiency. Using existing entry points, such as partnerships over transboundary ecosystems, regional economic communities and international funding instruments such as the Global Environment Facility and the Green Climate Fund, to leverage partnerships, capacity and resources, is particularly effective for policy implementation at regional and national levels. As of September 2017, 50 African countries had submitted their fifth national reports and 49 had submitted their revised national biodiversity strategies and action plans. About 16 per cent of all the targets adopted by African countries were commensurate with, or exceeded, the Aichi Biodiversity Targets, while about 50 per cent of the adopted targets were similar to the Aichi Biodiversity Targets but at lower or significantly lower levels (i.e., did not cover all elements), owing to national considerations. The remaining targets adopted by African countries were not relevant to the global Aichi Biodiversity Targets {6.3.3} (Figure SPM.7).

Effective conservation and sustainable use of biodiversity and ecosystem services will contribute to achievement of the objectives of the 2015 Paris Agreement on climate change to keep global temperature increase in this century below the 2-degree mark above pre-industrial levels and to strengthen the ability of countries to deal with the impacts of climate change (*established but incomplete*). Africa is the continent most vulnerable to climate change with relatively weak adaptive capacity. Africa's plan to address climate change impacts is enshrined in the 2014 African Strategy on Climate Change and consists of climate adaptation strategies to reduce vulnerability to climate change, enhance resilience and enhance mitigation through low-carbon development. African countries consider adaptation as the continent's climate investment priority and have taken actions to enhance resilience through the establishment and effective management of well-connected protected areas and other conservation areas, taking into account future species ranges; exploration of renewable energy including biofuels and biogas; restoration of vegetation cover and soil protection against erosion of degraded lands; and adoption of conservation agriculture. Mitigation measures also include reduced deforestation and reforestation to sequester carbon from the greenhouse gas emissions and the use of low-carbon technologies. The extent of climate change impacts will be strongly influenced by options available to decision-makers in the form of choices for development. As shown in sections C, D and E below, Africa has options, including the choice whether to follow a low carbon climate resilient development pathway (including commitments under the 2015 Paris Agreement on Climate Change; see Figure SPM.8) [or continue with business as usual. Such choices, including those taken by countries around the globe, will help determine the extent of impacts, as well as the continent's ability to adapt {3.3.2, 4.5.1, 4.2.2.2; Figure 4.1} (Figure SPM.6).

Figure SPM.7

Overview of the current and anticipated contribution of African countries towards the achievement of the Aichi Biodiversity Targets

Based on the fifth national reports submitted to the secretariat of the Convention on Biological Diversity as of September 2017 (50 African States).



Source: Adapted from UNEP-WCMC, 2016.⁸

538 **Africa's unique and abundant biodiversity is an asset for the achievement of the Sustainable**
 539 **Development Goals and can be sustainably and equitably used to reduce inequality and poverty**
 540 **on the continent (*established but incomplete*).** Africa has experienced robust growth and enjoyed
 541 increased financial opportunities over the last two decades, but it is also the only region that emerged
 542 from the Millennium Development Goals with increasing extreme poverty. Favourable conditions for
 543 achieving Sustainable Development Goals include abundant biodiversity, arable land, and highly
 544 diverse ecosystems, which are essential building blocks of sustainable development. Unfavourable
 545 conditions, however, such as the continent's lack of institutional capacity to make effective and
 546 efficient use of its natural resources, may undermine development. The close alignment between the
 547 strategic priorities of African Governments and the Sustainable Development Goals such as the
 548 protection, restoration, conservation and sustainable use of biodiversity will improve chances for their
 549 achievement. Key to biodiversity and ecosystem services approaches in Africa is the demonstration of
 550 how investments in Goals 14 and 15 (focused on conservation and sustainable use of natural resources
 551 for sustainable development) significantly contribute to human well-being (e.g., Goals 1, 2, 3, 6, and
 552 7). In addition, Goals 11 and 13 are focused on inclusive, safe, resilient and sustainable cities and
 553 human settlements; and building resilience to climate change impacts {5.1, 5.7, 5.9; Table 5.6}
 554 (Table SPM.2).

⁸ UNEP-WCMC, 2016. *The State of Biodiversity in Africa: A mid-term review of progress towards the Aichi Biodiversity Targets*. UNEP-WCMC, Cambridge, United Kingdom.
<https://wedocs.unep.org/rest/bitstreams/32269/retrieve>.

The achievement of the African Union Agenda 2063 Aspiration 1, for a prosperous Africa based on inclusive growth and sustainable development, is dependent upon the conservation and sustainable use of biodiversity and nature's contributions to people (*established but incomplete*).

Good governance mechanisms and strong institutions are critical to achieving aspirations and targets for a prosperous Africa. Agenda 2063 is an ambitious action plan for driving the change, development, and transformation that Africa needs to achieve significant poverty reduction and enhance human well-being. The transformation needed to achieve development may lead to increased agricultural production and productivity, industrialization, expansion and creation of large cities, bridging the infrastructure and technology gaps including for energy production, value-added manufacturing, transport and regional economic integration. Such transformation requires significant resources, together with effective institutions and good governance. Africa now has the opportunity to embark on such transformational development pathways. To achieve this, African countries need to balance responsible development (urban human settlements, mining and agriculture) with the progressive and proactive conservation of the continent's natural heritage. Such a balanced approach will ensure that critical ecosystems such as inland waters, forests or endemic ecosystems that are reservoirs of large biodiversity, are sustainably used and protected. Africa's regional economic communities have a significant role to play in coordinating the development of Africa's subregions in a way that is compatible with regional development and conservation objectives. Existing regional conventions such as the Benguela Commission, Abidjan Convention, Nairobi Convention, and Commission for Lakes, together with instruments such as transboundary conservation areas, peace parks and other transboundary catchment management frameworks, offer opportunities for enhancing access to and sharing of benefits from nature's contributions to people. Governance options that deliver multiple benefits can help to balance patterns of access and allocation of ecosystem services {5.6.7, 6.3.3, 6.6} (see also section E and Figure SPM.8).

555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579

Table SPM.2
Alignment of the Agenda 2063 aspiration for a prosperous Africa, Sustainable Development Goals and targets and Aichi Biodiversity Targets

POLICY ALIGNMENT			SCENARIO ARCHETYPES					
			Fortress-based	Business as usual		Managed transition		
Agenda 2063 Goals	Aichi Biodiversity Targets	SDGs and Targets	 FW	 MF	 PR	 LS	 RS	
3 Healthy, well-nourished citizens		Ecosystem services	1 No poverty (Target 1.4)	Orange	Blue	Green	Green	Green
		2 Zero hunger (Target 2.3)	Blue	Green	Green	Green	Green	
		3 Good health and well-being (Target 3.3)	Orange	Grey	Grey	Grey	Grey	
		5 Gender equality (Target 5.A)	Grey	Grey	Grey	Green	Grey	
5 Modern agriculture for increased productivity and production		Sustainable agriculture, aquaculture and forestry	2 Zero hunger (Target 2.3, 2.4, 2.A)	Blue	Green	Green	Green	Green
		12 Responsible consumption & production (Target 12.2, 12.3)	Orange	Orange	Orange	Grey	Green	
		15 Life on land (Target 15.2, 15.B)	Orange	Blue	Orange	Grey	Blue	
6 Blue ocean economy for accelerated growth		Sustainable management of aquatic living sources	2 Zero hunger (Target 2.3)	Orange	Grey	Green	Grey	Blue
		14 Life below water (Target 14.2, 14.4, 14.7, 14.B, 14.C)	Orange	Orange	Green	Grey	Orange	
7.1 Sustainable natural resource management		Pollution reduced	3 Good health & well-being (Target 3.9, 3.11)	Orange	Orange	Orange	Grey	Green
			6 Clean water & sanitation (Target 6.3)	Orange	Orange	Orange	Grey	Grey
			11 Sustainable cities & communities (Target 11.6, 11.8)	Orange	Orange	Orange	Grey	Orange
			12 Responsible consumption & production (Target 12.4)	Grey	Orange	Grey	Green	Orange
	14 Life below water (Target 14.C)	Orange	Grey	Green	Grey	Grey		
		Invasive alien species prevented and controlled	15 Life on land (Target 15.8)	Orange	Orange	Orange	Green	Grey

POLICY ALIGNMENT			SCENARIO ARCHETYPES					
			Fortress-based	Business as usual	Managed transition			
Agenda 2063 Goals	Aichi Biodiversity Targets	SDGs and Targets	 FW	 MF	 PR	 LS	 RS	
7.2 Biodiversity conservation, genetic resources and ecosystems	 13	Safeguarding genetic diversity	2 Zero hunger (Target 2.5)					
			15 Life on land (Target 15.6)					
	 15	Habitat loss halved or reduced	14 Life below water (Target 14.C)					
			15 Life on land (Target 15.1, 15.2, 15.5)					
	 12	Reducing risk of extinction	15 Life on land (Target 15.5, 15.7, 15.12)					
			16 Peace, justice & strong institutions (Target 16.4)					
	 11	Protected Areas	8 Decent work and economic growth (Targets 8.3, 8.9)					
			11 Sustainable cities & communities (Target 11.4)					
14 Life below water (Target 14.2, 14.5)								
15 Life on land (Target 15.4)								
7.3 Sustainable production and consumption patterns	 4	Sustainable production and consumption	6 Clean water & sanitation (Target 6.4)					
			9 Industry, innovation & infrastructure (Target 9.4)					
			11 Sustainable cities & communities (Target 11.6, 11.A)					
			12 Responsible consumption & production (Target 12.2 – 12.7)					
			14 Life below water (Target 14.10)					
	 1	Awareness of biodiversity increased & Biodiversity values integrated	4 Quality Education (Target 4.1, 4.7)					
			11 Sustainable cities & communities (Target 11.7)					
			12 Responsible consumption & production (Target 12.8)					
 2		13 Climate action (Target 13.3)						
		15 Life on land (Target 15.9)						
7.4 Water security	 14	Ecosystem services	1 No poverty (Target 1.4)					
			5 Gender equality (Target 5.A)					
			6 Clean water & sanitation (Target 6.1 – 6.8)					
			15 Life on land (Target 15.4)					
7.5 Climate resilience and natural disasters preparation and prevention	 15	Ecosystem restoration and resilience	11 Sustainable cities & communities (Target 11.5, 11.9)			→		
			13 Climate action (Target 13.1)				→	
			15 Life on land (Target 15.1, 15.3, 15.4)					
	 10	Ecosystems vulnerable to climate change	1 No poverty (Target 1.5)					
			13 Climate action (Target 13.2)					
7.6 Renewable energy			7 Affordable & clean energy (Target 7.1 – 7.5)					
			9 Industry, innovation & infrastructure (Target 9.4, 9.A)					

D. Africa has options

580
581 **Africa has a range of possible options for the governance of conservation and sustainable use of**
582 **biodiversity and its contribution to people to mitigate impacts of the challenges that the**
583 **continent is projected to face (see section B above). The identification and selection of feasible**
584 **options can be supported by considering a range of plausible futures through scenario**
585 **development and by providing an enabling environment for long-term planning (*established, but***
586 ***incomplete*).** Various policy instruments and measures can help decision-makers to integrate
587 biodiversity and ecosystem services into development planning and implementation (Table SPM.3).
588 African policy decisions for conserving and using biodiversity, sustainably adapting to and mitigating
589 climate change, and sustainably managing genetic resources, have global impacts. Subregional
590 policies are equally necessary and significant, considering the transboundary nature of Africa's
591 freshwater and marine systems, fisheries and migration-dependent ecosystems, including transhumant
592 systems. Progress in achieving the Strategic Plan for Biodiversity 2011–2020 and its Aichi
593 Biodiversity Targets, the 2030 Sustainable Development Goals, the 2015 Paris Agreement on climate
594 change and Agenda 2063, will be shaped by the governance and policy choices made, alongside steps
595 taken towards their practical implementation. However, favourable the policymaking environment
596 may be, governance options are restricted by past decisions. It is, therefore, important to identify what
597 challenges can be overcome by further strengthening the capacities and resources of African
598 Governments to deal with these inherent limits that render certain options impractical (e.g., degraded
599 land due to past policies) {5.4, 5.7, 5.9, 6.3}.

600 **Africa's existing biodiversity policies, strategies, plans and programmes at the national,**
601 **subregional and regional levels, are moving in the right direction by addressing both direct and**
602 **indirect threats to biodiversity and nature's contributions to people, and by ensuring inclusive**
603 **development and a transition to green⁹ and blue economies¹⁰ that are supportive of a good**
604 **quality of life (*established, but incomplete*).** These policies, strategies, plans and programmes,
605 together with a range of regional treaties addressing and related to the environment, are among the
606 tools for the implementation of multilateral environmental agreements. The goals and targets from
607 these agreements shape Africa's policy context for the governance of biodiversity and its contributions
608 to people. In order to achieve the targets set in these agreements, it is necessary to take into account
609 both current and future social, political, environmental and economic conditions, bearing in mind
610 ongoing changes at the global, regional, subregional and national levels. Scenarios are a useful tool for
611 exploring different plausible futures to inform policy and decision-making about the potential risks
612 and opportunities of different possible trajectories of social and ecological change, thereby assisting in
613 the formulation and implementation of policies and interventions {5.7, 6.2.1, 6.3}.

614 **Scenarios are currently only used to a limited degree in decision-making processes for the**
615 **conservation and sustainable use of biodiversity in Africa. Concerted efforts are needed to build**
616 **the capacity of African researchers, policymakers and institutions to understand and make**
617 **beneficial use of scenario analyses for intervention planning and informed decision making**
618 **(*established but incomplete*).** A survey of papers published between 2005 and 2016 identified 355
619 scenario studies and reports, with varying degrees of geographic representation and scales for Africa's
620 future. The majority of the identified scenario studies were exploratory (80 per cent), and heavily
621 biased towards modelling climate change impacts. The remaining few were policy-screening or target-
622 seeking in nature, or were focused on the retrospective evaluation of policies. There are clear gaps in
623 the geographical distribution of African scenario studies. Central, North and West Africa are poorly
624 represented, have limited stakeholder participation and limited incorporation of indigenous and local

⁹ As defined in the UNEP 2011 study, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication - A Synthesis for Policy Makers*, available from www.unep.org/greeneconomy, a green economy is one that results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities". In its simplest expression, a green economy is low-carbon, resource-efficient, and socially inclusive. In a green economy, growth in income and employment are driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services.

¹⁰ As described by the Economic Commission for Africa in its 2016 publication, *Africa's Blue Economy: A policy handbook*, available from www.uneca.org/sites/default/files/PublicationFiles/blue-eco-policy-handbook_eng_Inov.pdf, the Blue Economy concept includes recognition that the productivity of healthy freshwater and ocean ecosystems is a pathway for aquatic and maritime based economies and can ensure that islands and other coastal countries, and also landlocked States, benefit from their resources. It also requires an integrated, holistic and participatory approach that includes sustainable use and management. The Blue Economy promotes the conservation of aquatic and marine ecosystems and sustainable use and management of associated resources and builds on principles of equity, low carbon development, resource efficiency and social inclusion.

625 knowledge. The prevalence of studies in Southern and East Africa and adjacent islands is due to a
626 relatively long history of investment in biodiversity research. The same pattern was observed for
627 valuation studies of biodiversity and nature's contributions to people. In addition to human
628 capacity-building, there is a need to generate information, in particular quantitative data, needed for
629 the development of scenarios and to take into account the specific contexts and diversity of the
630 subregions, groups of people and related differences in culture, and in ecological, social and economic
631 conditions. There is also generally limited accessible peer-reviewed and grey literature to support a
632 comprehensive assessment of policy and governance options for Africa. This creates challenges when
633 identifying policy options but presents an opportunity for more frequent and comprehensive
634 ecosystem assessments. It also presents an opportunity for the development of case studies and pilot
635 projects that explore the different policy options and instruments that are specifically relevant in the
636 African context. Data collected from such efforts will help strengthen scenarios and models about
637 plausible futures for Africa {5.1.1, 5.2.1, 5.2.2}.

638 **African scenarios have been clustered into five archetypes emphasizing market forces, and**
639 **policy reform, which represent in some ways a business-as-usual situation, and also fortress**
640 **world, regional sustainability and local sustainability. The selected scenario archetypes provide**
641 **an overview of how interactions between nature and society, or between current environmental**
642 **and developmental conditions, existing driving forces, and optional management interventions,**
643 **could shape possible future trajectories of change across Africa in the coming decades.**
644 Achieving the African Union's vision of an integrated, prosperous and peaceful Africa by 2063, and
645 related Sustainable Development Goals and Aichi Biodiversity Targets, is problematic under a fortress
646 world scenario, which prioritizes national sovereignty, self-reliance and security. The policy reform
647 and market forces scenario trajectories are also unlikely to fully meet the aforementioned vision, given
648 their significant propensity to undermine the natural resource base in the long term. Regional
649 sustainability and local sustainability scenarios, however, provide the most likely options for
650 achieving multiple goals linked to the conservation and sustainable use of biodiversity and Africa's
651 development {5.3} (Table SPM.4).

652 **Regardless of the scenario trajectory assessed, future trade-offs between certain nature's**
653 **contributions to people and how they contribute to human well-being, are inevitable (*established***
654 ***but incomplete*). Trade-offs within the food-water-energy-livelihood nexus are apparent, and reduced**
655 **biodiversity and ecological functioning are anticipated under all the five archetypes assessed. The**
656 **severity of the trade-offs may, however, be mitigated by timely, progressive and proactive policy**
657 **interventions and environmental safeguards, which aim to build social-ecological resilience through**
658 **ecosystem-based activities. This could be complemented with improved access to ecological**
659 **information, and also to enhanced technical capacity and tools to analyse trade-offs, as a step towards**
660 **achieving robust development planning. Under each of the archetypes considered for Africa,**
661 **landscape conversion and extraction of goods and resources such as minerals, fish or food crops, and**
662 **infrastructure development, may lead to ecological degradation, while providing directly or indirectly**
663 **for the livelihood of local communities. The negative consequences of these trade-offs may be**
664 **mitigated to a degree by governance systems that recognize the value of biodiversity and its**
665 **contributions to people, and take measures, based on spatial planning, for the conservation and**
666 **sustainable use and management of natural assets, or support policy processes, such as environmental**
667 **impact assessment and strategic environmental assessment, under the regional and local sustainability**
668 **archetypes {5.3, 5.4, 5.5, 5.6, 5.7}.**

Africa's agenda 2063		Examples of responses (based on Table 6.2)		
Aspirations for a prosperous Africa relating to nature and its contributions to people	Strategic priority areas	Legal-regulatory	Economic-financial	Social-cultural
A high standard of living, quality of life and well-being for all citizens	1.2 Poverty, inequality and hunger	Implement pro-poor and gender sensitive development policies	Ensure and support fair trade	Develop and implement social protection policies
	1.4 Modern, affordable and liveable habitats and quality basic services	Ensure enforced air and water quality control	Conduct product life-cycle analyses to evaluating potential impacts	Incorporate indigenous design principles into urban planning
Healthy and well-nourished citizens	3.1 Health and nutrition	Protect and respond to citizens' right to food	Eliminate agricultural export subsidies	Ensure sufficient risk insurance is in place
Transformed economies	4.1 Sustainable and inclusive economic growth	Develop policies to decouple the environment from economic growth	Implement natural capital accounting	Develop and promote public works programmes
	4.4 Tourism/Hospitality	Develop and/or implement protected area legislation	Develop and maximise ecotourism	Develop skills of benefit to the sector
Modern agriculture for increased productivity and production	5.1 Agricultural productivity and production	Develop and implement policies and programmes for land tenure	Eliminate international trade distortions in world agricultural markets	Protect indigenous knowledge and seed exchange processes
Blue/ocean economy for accelerated economic growth	6.1 Marine resources and energy	Create new, and/or effectively manage, marine protected areas	Ensure fisheries quotas for large businesses	Ensure community access to marine resources
	6.2 Port operations and marine transport	Ensure the implementation of, and adherence to, environmental impact assessment findings	Promote technology transfer	Promote and support public-private partnerships
Environmentally sustainable and climate resilient economies and communities	7.1 Sustainable natural resource management	Improve pesticide and fertiliser regulation	Implement payment for ecosystem services schemes	Develop and support effective community-based natural resource management
	7.2 Biodiversity conservation, genetic resources and ecosystems	Develop and implement access and benefit sharing legislation	Ensure conservation offsets	Create and effectively manage community gene banks
	7.3 Sustainable consumption and production patterns	Employ a 'polluter pays' principle	Implement certification and eco-labelling schemes	Incorporate environmental education into the national curriculum
	7.4 Water security	Engage in trans-boundary water agreements	Implement and manage water accounts	Develop and support effective community watershed management
	7.5 Climate resilience and natural disasters preparedness and prevention	Implement disaster risk reduction strategies and early warning systems	Implement United Nations initiative on Reducing Emissions from Deforestation and forest Degradation, Clean Development Mechanisms type projects	Support and develop community-based adaptation
	7.6 Renewable energy	Improve energy efficiency standards	Engage in emissions trading and implement carbon taxes	Implement energy education programmes

Table SPM.4

Trends in the drivers of biodiversity loss, biodiversity, nature’s contributions to the people and human well-being under each of the archetypes used to categorize the scenarios surveyed in Africa with their possible implications in terms of governance responses

This table summarizes the results of an assessment of different drivers, biodiversity, nature’s contributions to people, and the dimensions of human well-being trajectories under different scenario archetypes for Africa. Drivers that were assessed include population, urbanization, consumption and natural resource use, regional and global resource demand and climate change. Elements of biodiversity and nature’s contributions to people that were assessed include: terrestrial and freshwater habitat loss, marine habitat loss, species range shifts, food and feed production, energy production, freshwater regulation, climate and natural hazard regulation and pollination. Dimensions of human well-being that were assessed include: material well-being, poverty reduction, equity, health, security and social relations, freedom and choice. The colour of the cell indicates the overall impact of the results across the reports, where green = overall positive impact, orange = overall negative impact, purple = contradictory trends, and no colour = no overall change or impact.

ARCHE-TYPES	SUMMARY DESCRIPTION	Drivers	Biodiversity	Nature's contributions to people	Human well-being	Potential governance responses/ Emerging implications
 <p>FORTRESS WORLD</p>	<ul style="list-style-type: none"> Expansive agriculture drives habitat loss, soil erosion and water pollution and low crop yields. This results in the largest relative habitat loss by 2050, undermining provisioning services, and water stress increases dramatically Ecosystem services will be reduced in significant proportion and hence nature’s contributions to people will be at its lowest level The intrinsic vulnerabilities of already fragmented habitat are worsened through increasing poverty levels and the over-exploitation of ecosystems all of which compromise human well-being Industrialisation leads to increasing disparity between the poor and the rich 	↑	↓	↓	↓	<ul style="list-style-type: none"> Promote investments in environmental friendly technologies (e.g. water pollution) Strong environmental and social regulations are enforced Human rights based approaches are enforced to meet needs and reduce inequalities
 <p>MARKET FORCES</p>	<ul style="list-style-type: none"> Human well-being increases under free trade but distribution of benefits may not be equal Habitat loss and biodiversity may increase in the long term which could compromise human well-being Economic growth may contribute towards recovery of degraded ecosystems and improved livelihoods 	↑	↓	↓	↗	<ul style="list-style-type: none"> Regulatory frameworks e.g. social safety nets to ensure basic needs are met Build government capacity to legislate and enforce community sensitive environmental policies Ensure that value of ecosystems are incorporated into environmental management plans (Private and Public sector)
 <p>POLICY REFORM</p>	<ul style="list-style-type: none"> Export driven growth strains economic diversification, with protected areas increasing Outside of protected areas, the strong dependence on a few natural resources leads to degradation of ecosystems Under low population pressure, human well-being appears to improve though it may be compromised in the long term by degradation of ecosystem services Loss of species and habitats outside protected areas due to agricultural expansion and infrastructural development would reduce ecosystem services and nature’s contributions to people 	↑	↓	↓	↑	<ul style="list-style-type: none"> Stimulate capacity, livelihoods and job creation in diverse sectors outside of primary industries Ensure effective implementation of community based conservation, and ecotourism (e.g. Community-based natural resource management principles are implemented) Ensure that private and public sector developments (e.g. industrial, agricultural) adhere to environmental and social standards
 <p>LOCAL SUSTAINABILITY</p>	<ul style="list-style-type: none"> Social equity and welfare are prioritised which result in improved human well-being Local sustainable agriculture ensures ‘sustainability hotspots’, but beyond these areas, degradation continues and habitats are fragmented The uncoordinated nature of local agricultural choices may undermine regional ecological integrity in the longer-term There is a high likelihood for retention of indigenous local knowledge as a result of its particular focus on local scales Haphazard growth may result in conflicts and numerous environmental crimes while in other areas innovative local adaptation emerges 	↑	↓	↗	→	<ul style="list-style-type: none"> Learn from sustainability bright spots and best practice and promote linkages and exchange of knowledge (e.g. Indigenous local knowledge for sustainable development) Promote markets for sustainably produced goods at local and subregional level

ARCHE-TYPES	SUMMARY DESCRIPTION	Drivers	Biodiversity	Nature's contributions to people	Human well-being	Potential governance responses/ Emerging implications
 <p>REGIONAL SUSTAINABILITY</p>	<ul style="list-style-type: none"> • More effective governance allows for more effective environmental regulation, increasing protected area function and coverage, and allowing for improved transboundary environmental cooperation • Conservation efforts are directed at sustainable use and maintenance of ecosystem services, rather than species protection • Technological innovation drives landscape homogenisation and potential food security with overall increase in human well-being 					<ul style="list-style-type: none"> • Leverage regional strength to access and develop sustainable global markets without compromising local ecosystem integrity • Build subregional resilience to shocks (e.g. climate related disasters) by maintaining global connections (e.g. markets, partnerships, resources, innovations)
<p>  Decreasing  Mixed trends  Increasing  Current trend continues </p>						

670

E. The future we want – making it happen together

671

672

673

674

675

676

677

678

679

680

681

682

683

684

685

686

687

688

689

690

691

692

693

694

695

696

697

698

699

Africa can move towards achieving its development aspirations, while at the same time improving the conservation of its valuable natural assets through multi-stakeholder and multilevel adaptive governance, along with the improved integration of indigenous and local knowledge through recognition of traditional institutions (hereinafter referred to as polycentric governance) (*established but incomplete*). Progress in achieving the Strategic Plan for Biodiversity 2011–2020 and its Aichi Biodiversity Targets, the Sustainable Development Goals and targets, the 2-degree centigrade commitments under the 2015 Paris Agreement on climate change and Agenda 2063 aspirations for a prosperous Africa, will be shaped by the governance and policy choices made (Table SPM.3), alongside steps taken towards their implementation (Figure SPM.8). Mainstreaming biodiversity and ecosystem services into policies and actions at different levels is vital to, and also consistent with, traditional polycentric governance approaches on the continent, which bring together stakeholders (public, private and local communities) with different perspectives, bridge sectors, and operate at multiple levels and scales, over different time frames. Polycentric approaches offer an alternative to top-down approaches that are less sensitive to local constraints, and to bottom-up approaches that are sometimes inadequate for dealing with issues at higher decision-making levels. When supported by appropriate legal, regulatory, economic and financial instruments, these approaches can harness consensus and co-learning through dialogue and knowledge co-production, while enacting principles of equity, transparency, accountability and participation. Although resource-intensive in the short-term because they demand significant time for dialogue and consultation, polycentric approaches offer agility in responding to change, reduce conflict, balance conservation and development objectives, and yield positive results in the medium to long term. A polycentric governance system is thus critical for enabling Africa’s diverse natural assets to deliver equitable benefits to people. Practiced for many years in Africa for managing diverse interests in resources, polycentric governance is grounded in the processes of accountability through stakeholder engagement, and addresses trade-offs. It further entails working across scales, sectors, values, and knowledge systems, integrating indigenous and local knowledge and their institutions, as well as adaptive management. It further involves building a sense of social responsibility, and pursues what might be termed “no regrets” options, particularly in relation to the drivers of changes described in section B above {6.2, 6.2.1, 6.3, 6.4.5}.

700

701

702

703

704

705

706

707

708

709

710

711

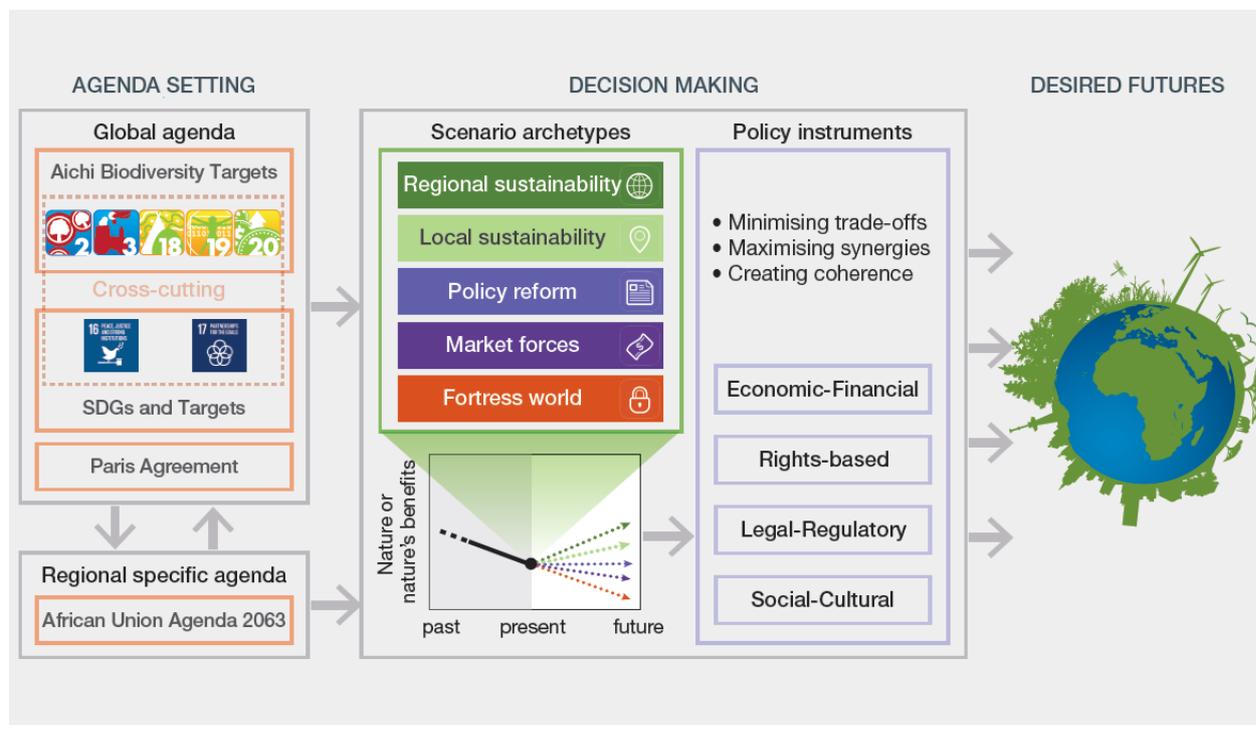
712

Governance options that harness synergies and deliver multiple benefits, supported by an enabling environment, can help to balance patterns of access and allocation of ecosystem services in Africa (*established but incomplete*). Policy coherence may also contribute towards poverty reduction and help to build the resilience of integrated social -ecological systems. Using existing entry points in spatial planning, land use management and integrated development planning, and mechanisms that draw on a mixture of policy instruments, can help to leverage synergy, helping to improve the implementation of policy at regional and national levels. Africa’s radical transformation towards sustainability in line with the 2030 Agenda for Sustainable Development and Agenda 2063 will depend on investment targeting multi-stakeholder, multilevel adaptive governance. By ensuring policy coherence in the context of adequate resources and capacity, and ensuring adaptive governance approaches that bring together different perspectives, a more socially just approach to accessing ecosystem services and biodiversity can ensue, helping to make sure that the costs and benefits are more appropriately distributed {6.3.3, 6.6}.

Figure SPM.8

Linking the regional and global agendas through scenarios and policy instruments to the desired futures

Achieving a desirable and equitable future for Africa is based on an existing set of regional and global goals and targets. By using scenarios as a tool to think about how futures could play out, an enabling policy environment can be co-created to maximize synergies and coherence between actions and minimize trade-offs. Figure SPM.8 starts with a set of existing targets and objectives that the majority of African nations have agreed to and that must be attained if Africa is to reach a desirable future (Table SPM.2). In order to reach these goals, there is a set of scenario archetypes that help us to think about what potential futures could arise under different conditions and the trade-offs associated with each of these (Table SPM.3). This figure also emphasizes that policy instruments are only as good as their enabling environment. The cross-cutting institutional targets focus on what needs to be done within and between institutions to achieve a desirable future. These are cross-cutting because they not only map on to one cluster of targets, such as around water or energy, but are necessary to achieve them all.



714

Appendix 1

715

Communication of the degree of confidence

716

717

718

719

720

721

722

Each key finding of an IPBES assessment report, whether in the executive summary of the chapters or in the summary for policymakers, is accompanied by a confidence language statement. In assessments, and in relation to knowledge, confidence refers to the degree of certainty that experts have about their findings. Low confidence describes a situation of incomplete knowledge, when an outcome cannot be fully explained or reliably predicted, whereas high confidence conveys extensive knowledge and the ability to explain an outcome or predict a future outcome with much greater certainty. Low confidence thus signals the need for further research.

723

724

725

726

727

The degree of confidence in each main finding is based on the quantity and quality of evidence and the level of agreement regarding that evidence (Figure SPM.A1). The evidence includes data, theory, models and expert judgement. IPBES assessments use four specific phrases known as “confidence terms” in order to categorize the experts’ level of confidence in their findings consistently, expressed in a four-box model of confidence as follows:

728

729

730

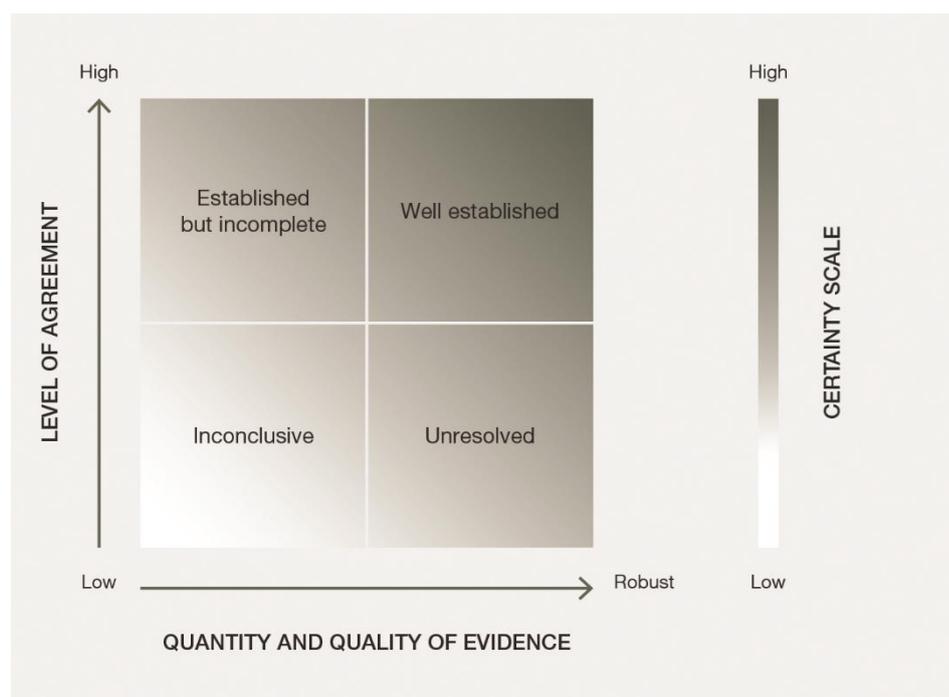
731

- “well established” (robust evidence and high level of agreement)
- “unresolved” (robust evidence but low level of agreement)
- “established but incomplete” (low quantity and quality evidence but general level of agreement)
- “inconclusive” (low quantity and quality of evidence and low level of agreement)

Figure SPM.A1

The four-box model for the qualitative communication of confidence

Confidence increases towards the top right corner as suggested by the increasing strength of shading.



Source: IPBES, 2016.¹¹

¹¹ IPBES, *Summary for policymakers of the assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on pollinators, pollination and food production*. S.G. Potts, V. L. Imperatriz-Fonseca, H. T. Ngo, J. C. Biesmeijer, T. D. Breeze, L. V. Dicks, L. A. Garibaldi, R. Hill, J. Settele, A. J. Vanbergen, M. A. Aizen, S. A. Cunningham, C. Eardley, B. M. Freitas, N. Gallai, P. G. Kevan, A. Kovács-Hostyánszki, P. K. Kwapong, J. Li, X. Li, D. J. Martins, G. Nates-Parra, J. S. Pettis, R. Rader, and B. F. Viana (eds.). Secretariat of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Bonn, Germany. (2016). Available from www.ipbes.net/sites/default/files/downloads/pdf/spm_deliverable_3a_pollination_20170222.pdf.

Appendix 2

Nature's contributions to people

Nature's contributions to people are all the contributions, both positive and negative, of living nature (i.e., diversity of organisms, ecosystems, and their associated ecological and evolutionary processes) to the quality of life of people. Beneficial contributions from nature include such things as food provision, water purification, flood control, and artistic inspiration, whereas detrimental contributions include disease transmission and predation that damages people or their assets. Many of nature's contributions to people may be perceived as benefits or detriments depending on the cultural, temporal or spatial context.

The concept of nature's contributions to people broadens the widely-used ecosystem services framework¹² by also considering views on nature versus human relations held by other knowledge systems. It is not intended to replace the concept of ecosystem services. Rather, nature's contributions to people broaden the scope for bringing social sciences and humanities to the ecosystem services approach, by making possible a more integrated cultural perspective on ecosystem services.

Ecosystem services has always included a cultural component among its four categories:

- Supporting services (now part of “nature” in the IPBES Conceptual Framework)
- Provisioning services
- Regulating services
- Cultural services

At the same time, there has been a long-standing debate in the ecosystem services science community, and in policy circles, about how to deal with culture. The social science community emphasizes that culture is the lens through which ecosystem services are perceived and valued. In addition, the categories of ecosystem services have tended to be discrete, while nature's contributions to people allow for a more fluid connection across the above dimensions. For example, food production, traditionally considered to be a provisioning service, can now be categorized both as a material and a non-material contribution by nature to people. In many – but not all – societies, people's identities and social cohesion are strongly linked to growing, gathering, preparing and eating food together. It is thus the cultural context that determines whether food is a material contribution by nature to people, or one that is both material and non-material.

The concept of nature's contributions to people was developed to address the need to recognize the cultural and spiritual impacts of biodiversity, in ways that are not restricted to a cultural ecosystem services box, but instead encompasses diverse world views of human-nature relations. Nature's contributions to people also make it possible to consider negative impacts or contributions, such as disease.

There are 18 categories of nature's contributions to people, which closely map on to the three categories of ecosystem services (noting that supporting services are no longer an ecosystem service in the IPBES Conceptual Framework).

¹² Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis. (Island Press, Washington, D.C.).

770

Appendix 3

771

Aspirations, goals and priority areas of Agenda 2063 of the African Union

772

(*Agenda 2063: The Africa We Want*; African Union Commission, 2015;

773

<http://www.un.org/en/africa/osaa/pdf/au/agenda2063.pdf>)

GOALS		PRIORITY AREAS	
ASPIRATION 1. A prosperous Africa based on inclusive growth and sustainable development			
1	A high standard of living, quality of life and wellbeing for all citizens	1.1	Incomes, jobs and decent work
		1.2	Poverty, inequality and hunger
		1.3	Social security and protection, including persons with disabilities
		1.4	Modern, affordable and liveable habitats and quality basic services
2	Well educated citizens and skills revolution underpinned by science, technology and innovation	2.1	Education and STI driven skills revolution
3	Healthy and well-nourished citizens	3.1	Health and nutrition
4	Transformed economies	4.1	Sustainable and inclusive economic growth
		4.2	STI driven manufacturing, industrialization and value addition
		4.3	Economic diversification and resilience
		4.4	Tourism/Hospitality
5	Modern agriculture for increased productivity and production	5.1	Agricultural productivity and production
6	Blue/ocean economy for accelerated economic growth	6.1	Marine resources and energy
		6.2	Port operations and marine transport
7	Environmentally sustainable and climate resilient economies and communities	7.1	Sustainable natural resource management
		7.2	Biodiversity conservation, genetic resources and ecosystems
		7.3	Sustainable consumption and production patterns
		7.4	Water security
		7.5	Climate resilience and natural disasters preparedness and prevention
		7.6	Renewable energy
ASPIRATION 2. An integrated continent, politically united, based on the ideals of Pan-Africanism and the vision of Africa's Renaissance			
8	A United Africa (Federal or Confederate)	8.1	Frameworks and institutions for a United Africa
9	Continental financial and monetary institutions established and functional	9.1	Financial and monetary institutions
10	World class infrastructure criss-crosses Africa	10.1	Communications and infrastructure connectivity
ASPIRATION 3. An Africa of good governance, democracy, respect for human rights, justice and the rule of law			
11	Democratic values, practices, universal principles of human rights, justice and rule of law entrenched	11.1	Democracy and good governance
		11.2	Human rights, justice and rule of law
12	Capable institutions and transformative leadership in place	12.1	Institutions and leadership
		12.2	Participatory development and local governance
ASPIRATION 4. A peaceful and secure Africa			
13	Peace, security and stability is preserved	13.1	Maintenance and preservation of peace and security
14	A stable and peaceful Africa	14.1	Institutional structure for AU instruments on peace and security
		14.2	Defence, security and peace
15	A fully functional and operational APSA	15.1	Fully operational and functional APSA all pillars
ASPIRATION 5. Africa with a strong cultural identity, common heritage, values and ethics			
16	African cultural renaissance is pre-eminent	16.1	Values and ideals of Pan Africanism
		16.2	Cultural values and African Renaissance
		16.3	Cultural heritage, creative arts and businesses

ASPIRATION 6. An Africa whose development is people-driven, relying on the potential offered by African people, especially its women and youth, and caring for children			
17	Full gender equality in all spheres of life	17.1	Women and girls empowerment
		17.2	Violence and discrimination against women and girls
18	Engaged and empowered youth and children	16.3	Youth empowerment and children's rights
ASPIRATION 7. An Africa as a strong, united and influential global player and partner			
19	Africa as a major partner in global affairs and peaceful co-existence	19.1	Africa's place in global affairs
		19.2	Partnerships
20	Africa takes full responsibility for financing her development	20.1	African capital markets
		20.2	Fiscal systems and public sector revenue
		20.3	Development assistance

774

775